PFNDAI

PFNDAI Bulletin

FOOD, NUTRITION & SAFETY MAGAZINE

SEP 2018

NEWER DIRECTIONS FOR FOOD TECHNOLOGY

Also Inside

High Intakes of Fat, Salt and Sugar:
Rulemaking based on Risk Management

Report of workshop on Capacity Building:
Food Regulatory Process Responding to Regulatory Notices/Notifications

PROTEIN FOODS AND NUTRITION DEVELOPMENT ASSOCIATION OF INDIA

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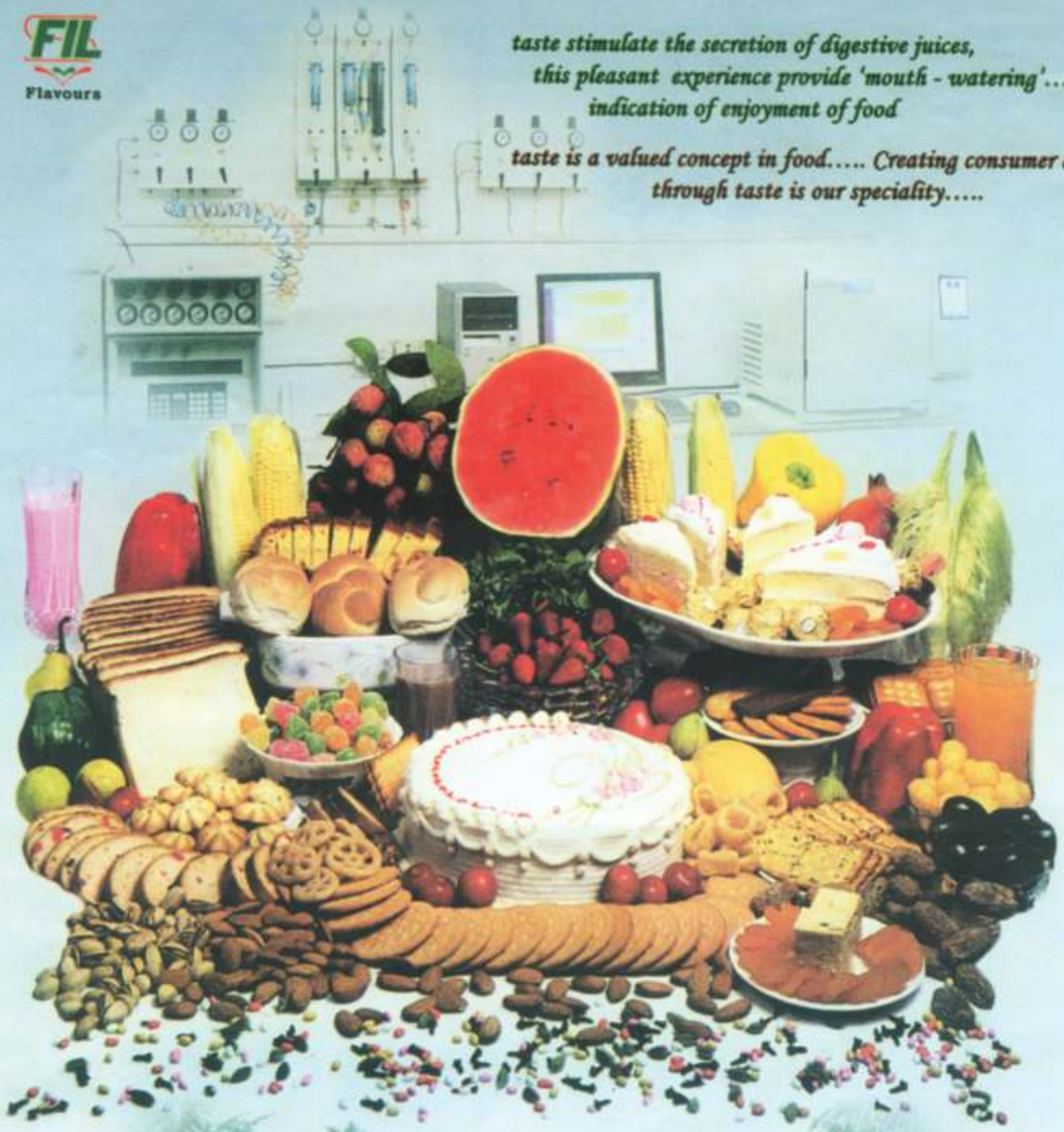

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FOOD, NUTRITION & SAFETY MAGAZINE

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EDITORIAL

PFNDAI has completed 50 years and has been doing many things to benefit its members in particular and all stake holders in general with special emphasis on creating awareness about the food and food products with respect to their safety, nutrition and quality. While most of the last five decades it tried to do this by traditional ways including publications, meetings & conferences, projects and holding special programs focused on these aspects.

Things are rapidly changing as has been seen by use of internet and computers and smart phones that communication is drastically changing. People are spending more time on social media like Facebook and LinkedIn and WhatsApp than reading books, journals and newspapers. We not only have to keep up with these changes and adapt ourselves to them. PFNDAI has already started doing that with Facebook and LinkedIn. It has got excellent response and its pages are being viewed regularly by hundreds of persons and at times the number has gone to a couple of thousands.

It also started sending its popular publication PFNDAI Bulletin to the members and well-wishers in the soft format. It not only goes instantly but it also saves cost of printing and courier. It is also planning to start a blog which will be useful to members and most importantly the students and teachers of food science and nutrition subjects.

However, this is just keeping up with the changes. PFNDAI can do much more. Not only can it provide information but also may be able to catalyse some of the changes that are necessary. People world-over want healthier and nutritious foods and products. They want fewer additives and more ingredients they are familiar with. They want them to be tasty without the ill-effects of substances providing taste and flavour. So it is going to be a huge task for the food scientists to prepare the products with less salt, sugar and fat and still make the products delicious. They may have to use processes that not only cause less harm to nutrients but also do not affect adversely the taste, colour, flavour and other sensory attributes. They should be able to incorporate nutrients and nutraceuticals without altering the appeal of the food. This requires working together of food scientists, nutritionists & dietitians, phytochemical experts, flavour experts and may be some others. PFNDAI will have to bring them together.

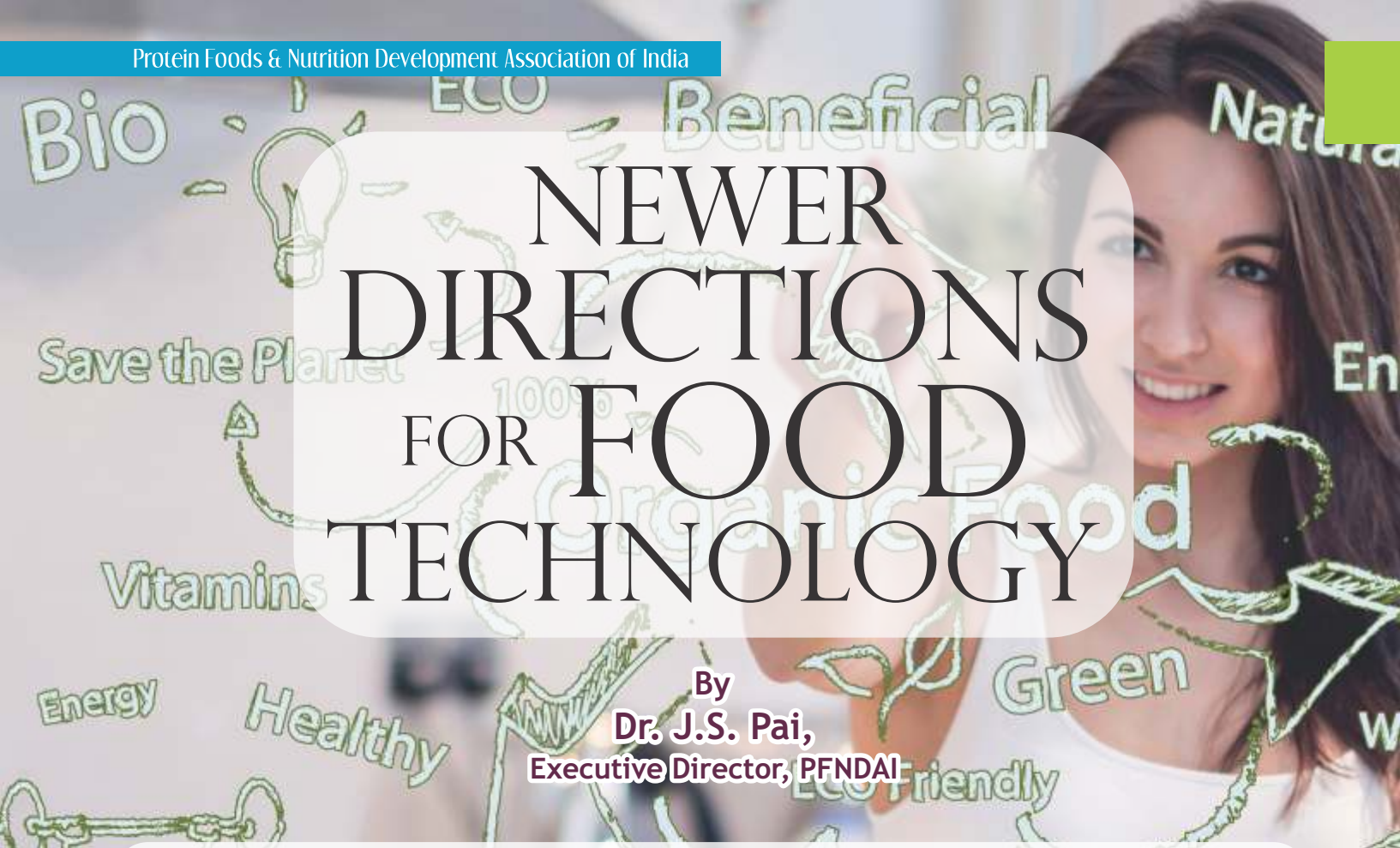
Secondly, there are many apps being developed for consumers to compare different food products with respect to nutrition and cost etc. Is it possible to help develop apps to help either manufacturers, nutritionists and consumers that would give besides the nutritive values of food ingredients but also how balanced diets could be achieved by combinations of different foods and/or ingredients, help in menu planning etc.

There are many IT experts and they need inputs from professionals so they can develop apps for specific area for example, in accounting, or investment or interior decoration etc. Similarly, food scientists and nutritionists can provide inputs so they may develop apps that would be most useful in the area of food science and nutrition. PFNDAI can help bring them together.

Prof. Jagadish S. Pai,
Executive Director,
PFNDAI

NEWER DIRECTIONS FOR FOOD TECHNOLOGY

By
Dr. J.S. Pai,
Executive Director, PFNDAI



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Non-communicable Diseases (NCD)

Current decade has seen a large increase in many non-communicable or life-style diseases globally. India is no exception. There have been worries not only for health professionals but for common individuals as well about how these could be mitigated. People are getting obese, developing hypertension, cardiovascular diseases, diabetes and many other diseases due to various risk factors including diets. This would not only increase healthcare bills enormously but also the productivity would be adversely affected. So governments are also worried about NCDs. Regulators in many countries including India have been trying to communicate messages about them. The seriousness of the problem is felt when even children started having these problems which were earlier thought to be of older individuals.

Consumers' Demands

The awareness has had some effect so common individuals started reading more about these problems and looking for solutions. As has been mentioned earlier this problem has many causes including diet and physical activity besides many others. People have become too sedentary that even children have started playing computer games and watching videos rather than playing sports outside on fields. People use cars and elevators rather than walk and use steps. Thus the expenditure of energy through by way of physical activity has drastically reduced.

However, this does not tell the whole story. People have started consuming not just more calories but these calories are accompanied by less proteins, dietary fibre and micronutrients. Thus they would eat full meals but again feel hungry much sooner. Good amounts of calories from sugar and fat as well as sizeable amount of salt (or sodium) comes from processed foods. Various surveys, however, indicate that Indian consumers take in sugar, fat and salt in much larger quantities through home-cooked foods. This was indicated by their purchase of these ingredients. Additional amounts come through restaurant foods. Recent trend of ordering food on-line and getting delivered home are also adding this amount.

Consumers have realized that they need to do something to change their diet. The recent video by FSSAI has very nicely shown how consumers could do that. Besides that, consumers are now looking for products which allow them to indulge but would not cost them in terms of these diseases. Thus this is a new opportunity for food manufacturers besides many other new avenues opening for newer products.


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Ingredients

Our diets have changed over last couple of decades and we have started consuming products increasingly made from refined wheat flour rather than whole wheat flour. Whole flour has bran which has dietary fibre and some micronutrients. Dietary fibre helps provide fullness after a meal and also helps bowel movements. We also reduced our intake of pulses which provided both proteins and dietary fibre. Our intake of fruits and vegetables has always been low and with respect to green leafy vegetables it is extremely poor.

These changes occur when most of our food is consumed outside and when we have a large consumption of packaged foods. Unfortunately this change has taken place even in home cooking. Children do not like greens but even adults do not bother. We have also decreased our consumption of millets drastically.

One problem may be due to increasing prices of pulses and fruits and vegetables. Even the consumption of potatoes has increased substantially. It is then the vicious circle of prices, availability and consumption. Somehow this needs to be broken.

Slowly markets are seeing introduction of many food products that contain these much needed ingredients. Although the formulated foods can more easily use purified ingredients which are more expensive than the whole ingredients. There are advantages of using purified dietary fibre as they do not have the smell or colour of the source. It is difficult to mask beany odour of pulses when used in nutritional bars if whole pulses or their powders are used.

Millets are now becoming increasingly appealing to manufacturers as well as consumers. They are making a comeback so their costs and availability will improve as more people demand these products. There are snack products now available made from sweet potatoes as alternatives to potatoes. Manufacturers have begun adding greens in their products so it makes better marketing sense.


Image © iStock.com/ Arundhati Sathe

Nutrients & Micronutrients

As FSSAI has allowed and encouraged food manufacturers in fortifying their products starting with milk and edible oils, more such products will appear in the markets. Earlier products were available with fortification but when the subsidy was removed the fortification also disappeared. It was too early as consumers were not sensitised. Now they are aware and are looking for products with vitamins and minerals added.

Consumers however would prefer to have products which are naturally nutritious. It has been seen in developed countries where clean labels have started making a big impact on sales. When chemical sounding names appear in ingredients list, consumers hesitate. So if fruits, vegetables and herbs are added as source of nutrients these are more acceptable to consumers especially to mothers who would like such foods for their children.

Identifiable ingredients have made a big impact abroad and it will slowly do the same here as well. Familiarity with the names makes acceptance easier. So if acidity, stabilisers like pectin etc. are added through fruits or vegetables it becomes easier for consumers to understand and buy it.

Healthy Ingredients

Nutraceuticals and Functional Foods have made way to a large number of ingredients from plants to be used in food products for their health benefits. Such ingredients like spices, herbs and other botanicals or their isolated substances have shown a lot of benefit on reducing risks of many diseases such as heart disease, diabetes, joint problems, diseases affecting seniors and many others could be delayed by regular consumption of these ingredients though diets.

Some of these ingredients have been used in alternative medicines or folk medicines for ages, but many of these and some new ones have shown newer applications and benefits. Curcumin, capsaicin, lutein, etc. have been extensively studied for newer benefits and have shown remarkable potential for such applications.
Newer applications in newer food products requires not only safety studies but also efficacy upon processing and using under conditions of food preparation will be necessary to show that they still work in such applications.

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GOODBYE!
INDIA'S PROTEIN-DEFICIENCY.

A recent survey suggests that 73% of Indian diets are protein-deficient*. Part of the reason lies in the insufficiency of protein content in conventional protein sources such as eggs, lentils, milk etc. Moreover, the steep cost (per 100 gms of protein) of these sources makes it even difficult for families to fulfil their daily protein need. We at Ruchi Soya, the makers of Nutrela Soya Chunks, Mini Chunks and Soya Granules, help consumers bridge this gap by providing the richest source of protein at the most affordable price, which we call '52% Dhaakad Protein'. 200 grams of soya contains 52% protein which is equivalent to 15 bowls of cooked daal or 16 boiled eggs or 17 glasses of cow's milk. We urge you to make soya an integral part of your diet recommendations. Let us join hands to help India say a GOODBYE to protein-deficiency!

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*Source: The Times of India, July 2017

Loggerheads_2018

Food Safety

Newer sources of foods and ingredients as well as healthy components are constantly being searched as markets are growing. In order to be competitive, newer, more effective and less expensive sources are being explored. Safety has become most important especially since much of the foods are now travelling across national boundaries. Safety needs to be demonstrated and monitored as the newer ingredients come into markets. Risk analysis is a scientific method of finding out the safety of any food or ingredient to be used in food. This method avoids safety by chance and allows only safe foods into the markets if followed scrupulously.

Biotechnology

As food is becoming scarcer as population keeps on increasing, traditional methods are now joined by some unorthodox methods. Fermentation is no longer a new method but tissue culture technique to grow meats in labs without animals is new. Genetically modified food is yet to get general approval by people as it is becoming difficult to avoid its use. When we do not want pesticides, one of the methods is GM crops which are resistant to pests. Although many people are still not convinced about the safety of these. Many changes already use enzymes which make safer products because very little or no by-products are formed. Bio-fortified rice is now available. Many other foods are being developed.

Conclusion

In view of all these changes and factors affecting markets for food products, manufacturers will have to keep their ears to ground to foresee some of the changes coming in near future if they want to stay in game. Science is allowing changes more rapidly with the help of internet and computers, some changes will appear faster than expected. It is better to be prepared for such changes.

Even consumers are seeing changes more easily with the advent of social media so something really superior in taste, flavour or health benefits would go viral and change the markets overnight. Indians are more traditional and will resist change unlike others but they have also shown adaptability to new.

COMING EVENTS

Golden Jubilee Seminar of PFNDAI
Emerging Foods for Healthier India
October 5/6, 2018
Kohinoor Continental
Andheri-Kurla Road, Mumbai
T: 022-2353 8858/8998
E: foodscientist@pfndai.org
W: www.pfndai.com

IUFoST 2018 India
World Congress of Food Sci & Tech
October 23-27, 2018
Mumbai
W: https://www.iufost2018.com/index.php

6th BAPA FoodPro
October 25-27, 2018
Bangabandhu Intl Conf Centre
Dhaka, Bangladesh
T: +91 79 4000 8233/53
E: foodpro@gpeexpo.com
W: www.foodpro.com.bd

Food Tech
Food Expo
December 1-4, 2018
Chandigarh
T: +91 92160 00125,
E: agnivesh.joshi@cii.in
W: www.agrotech-india.com

Food Tech Kerala
December 6-8, 2018
Cochin, Kerala
W: www.foodtechkerala.com

IFCON 2018
AFST (I)
December 12-15, 2018
CFTRI Mysore
Thanjavur, Tamil Nadu
T: +91 821 2515557, 2518670
E: ifcon2018mysore@gmail.com
W: http://afsti.org/ifcon

CILSI 2019
A Brave New World in Nutrition & Food Safety
December 12-15, 2018
Clearwater, Florida, USA
E: annualmeeting@ilsi.org
W: www.ilsi.org

Food Tech Pune 2019
Dfebruary 23-24-25, 2018
HA Exhibition Ground
Pimpri, Pune
T: 011-2953 5593/5872
E: foodtechpune@gmail.com

HIGH INTAKES OF FAT, SALT AND SUGAR: RULEMAKING BASED ON RISK ASSESSMENT

By
Dr. JI Lewis,
Food Regulatory Consultant & Vice Chairman, Regulatory Affairs Committee, PFNDAI

Risk characterization integrates the previous steps of risk assessment (earlier article) providing an overall conclusion for the risk manager - Food Authority - to act upon. If a health risk is identified under the risk assessment process and it affects the general population, a public health goal is required. A public health goal states the existing level of risk presented by the consumption of fat, salt and sugar, and projects the required level of reduction of these nutrients to mitigate the disease burden: coronary heart disease, hypertension diabetes and others. The benefit of disease reduction is stated – as a public health goal - in percentage terms or incidences – morbidity or mortality - per ten or hundred thousand persons of the affected population.

When regulations are made without taking into account the existing evidence and seeks only to appease a popular perceptionit grossly misleads stakeholders into believing that something good will happen. Risk management ensures that decision makers select the most impactful option from several available to mitigate the disease. Stakeholders have the right to know which of the measures will be more impactful; graphic labelling or public education and awareness.

Health professionals agree that diets high in fats, particularly saturated and trans fat tend to increase the risk of developing coronary heart disease, and too much salt increases the chances of developing hypertension (high blood pressure). Equally important but subdued in advocacy is the lack of physical activity that contributes significantly to the adverse impact of a high fat, salt and sugar diets, leading to obesity and risk of chronic diseases including type 2 diabetes. These facts are scientifically established over time from numerous studies. The scientific debate must move from catchy sloganeering - " diabetes capital of the world"; " one in five are obese", 'sugar is the next tobacco, - etc. – to finding sustainable solutions.

Exposure assessment from two surveys (previous article) reveals that the major source of fat, salt and sugar is purchased food commodities and not pre-packaged foods. The data however incomplete should not be a pretext to invalidate trends out of hand but instead mobilize interested parties including opposing groups to corroborate or refute with more data. The qualitative risk characterization arrived at in the previous article is further supported by data on discretionary use in home cooking or unlabeled food packages.

Sugar: An AC Nielsen survey (2007) analysed the available sugar consumption **(Fig 1a,b, c)** of 17.52 million metric tonnes (MMT). Direct household consumption is 6.75MMT **(Fig 2a)**, amounting to 38.6% of the total consumption of 17.52MMT.

Fig 1a. Sugar consumption by segments

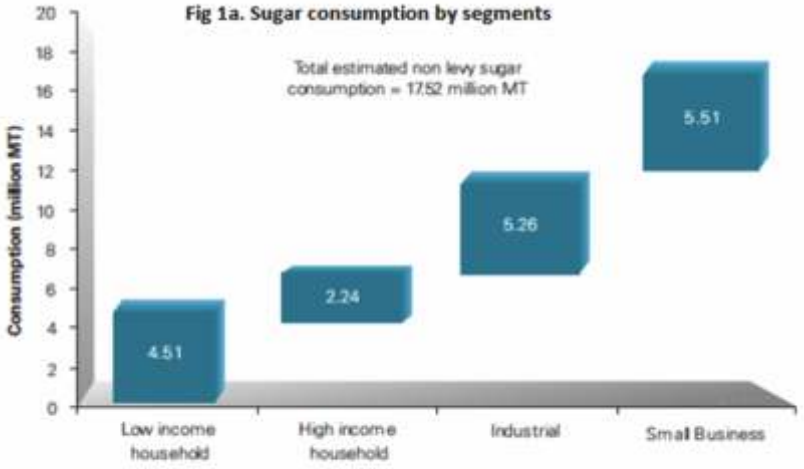

***Figure 19**: All India non levy sugar consumption by segments (2006-07)[20]*
Source: AC Nielsen survey conducted in March 2007, KPMG analysis


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Of the Industrial consumption of 5.26 MMT **(Fig 1b)**; confectionery, bakery and carbonated beverages - i.e. labeled pre-packaged foods - account for 1.04, 0.84 and 0.79respectively, amounting to 2. 67MMT.

jaggery at 38.9 ± 25.9g, consumption units (CU) per day is approximately 78% of the recommended consumption of 10% energy (WHO 2015). A major source of sugar is from discretionary use and unpackaged

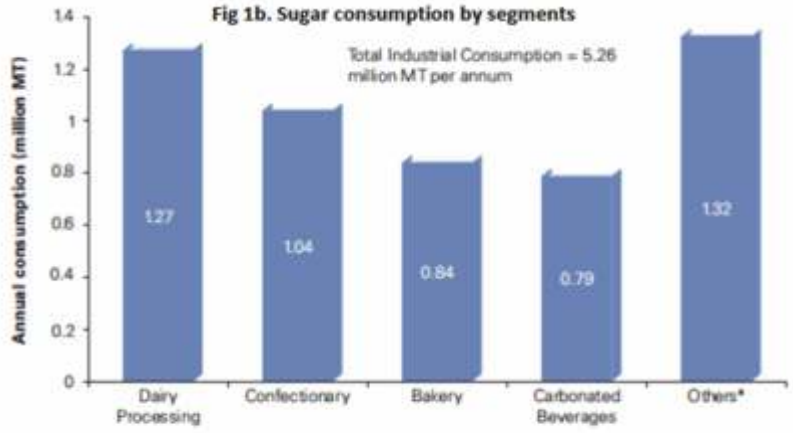
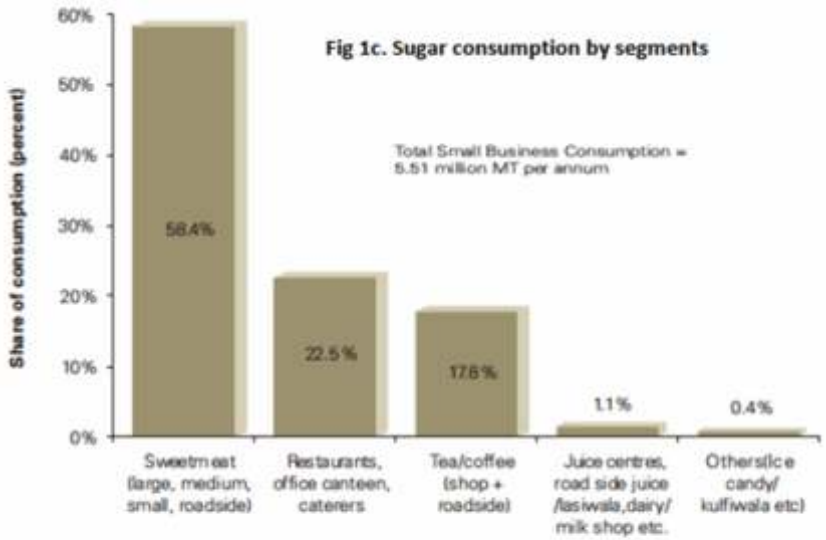


***Figure 22**: Industrial consumption by segments (2006-07)[28]*
Source: AC Nielsen survey conducted in March 2007, KPMG analysis

In the small business segment which represents the "unpackaged' segment" the consumption is 5.51 MMT, where the writ of labelling rules do not apply **(Fig 1c)**.

The total "unlabelled segment"comprising of home consumption (6.75MMT) and the unpackaged segment (5.51MMT) is about 12.26 MMT (70%)of the total sugar of 17.52MMT as against the 2.67MMT (15%)for labelled pre-packaged foods.

In a survey of 2977 households (Sengupta R and Udipi S A; PFNDAI Bulletin, March 2017), the average consumption of sugar and



or unlabelled foods.

***Figure 23**: Small business consumption by segments (2006-07)*
Source: AC Nielsen survey conducted in March 2007, KPMG analysis

Fat, saturated fat (SFA) and trans fat (TFA): The same survey (PFNDAI Bulletin, March 2017) compared the mean consumptions of ghee, butter, vanaspati and oil in 2011 and 2017 **(Fig 2)**; purchased for discretionary use at home. Consumption per CU per day of fats and oils was 54.7g representing 81% of the recommended total fat intake of 67g.

Notably, the consumption of ghee, butter and vanaspati decreased over the 6-year period by as much as 138g, 422g and 424g respectively per family/month. Being major sources of saturated fat the decrease from ghee is approximately 85g (SFA; 62%); 215g (SFA; 51%) from butter and 212g (SFA; 50%)from vanaspati: a total of 512g per family per month. On a per day basis and making an assumption that the family comprise 3 individual the estimate would be 6g/day. Animal products contribution to saturated fat is low compared to western diets; e.g. India (4.4kg) compared with US (120kg) per year This significant reduction is attributable to consumer awareness, without the influence of graphic labelling.. If the recommended saturated fat intake is 22g per day (10% of energy), the intake by Indians is low.

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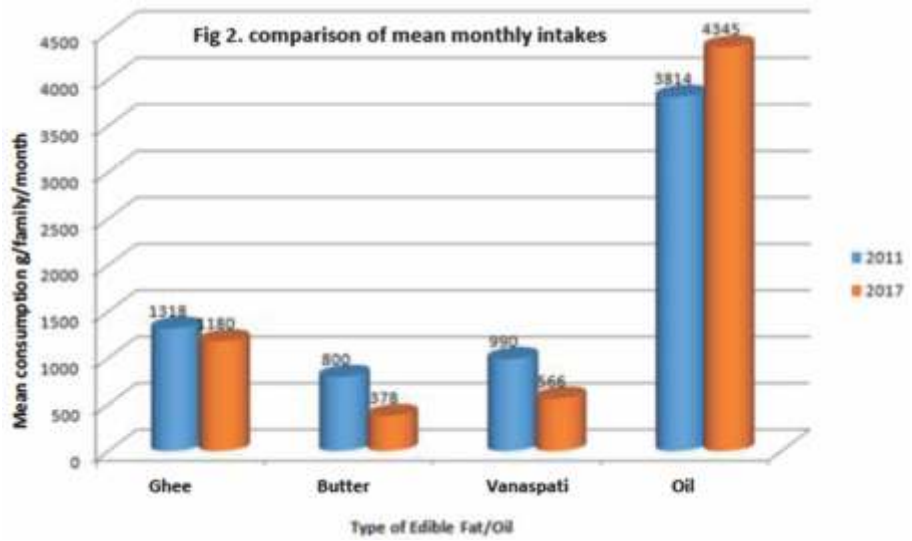


Trans fat: WHO recommends total trans fat intake should be limited to < 1% total energy, which isabout 2.2 g/day.A review by the Scientific Advisory Committee on Nutrition (SACN; 2007) opined that the increased risk of CHD attributable to consuming TFA greater than 1% food energy did not differ significantly between 1-2% from 1% due to a lack of evidence for a linear relationship in the range.

In Australia and New Zealand, manufacturers are not required to declare TFA's on the label, although they may voluntarily do so or required when a claim is made.

The Ministry accepted the Food Standards Australia New Zealand (FSANZ) advice that given the low level of trans fat (average of 0.5-0.6% of food energy; well below WHO recommendation of 1% energy) in the food supply, mandatory labelling does not appear warranted. It however found that intakes of saturated fatty acids are higher than recommended levels.

EU legislation does not regulate the content of TFA in foodstuffs nor does it require it's labelling, in view of the TFA level being within recommended levels of intake. The European Commission (EC) is however required to monitor presence of trans fats in the overall diet to determine whether further decisions are warranted. These are risk management decisions based on exposure assessment of the trans fats in the diet. Such regulatory decisions are proportionate to the risk presented and are not arbitrarily imposed or unfair to trade.

An Indian study, supported by the Directorate of Vanaspati, Ministry of Food and Consumer Affairs (International Food Research Journal (4): 1609-1614; 2012) on both labelled and unlabelled food items noted that while there are labelling regulations on pre-packaged foods, items such as cakes, pastries, bun, puffs, namkeens etc. are not required to do so.While attention to industrially manufactured TFA's dominates the perception of high intake, less attention is given to animal based TFA's even though there is insufficient evidence to suggest absence of adverse effect between them.

Salt: The World Cancer Research Fund (WCRF) for example, estimated that, in the UK an average of 8.6g of salt a day is consumed, 2.6g (43%) higher than the recommended maximum daily intake for adults of 6g.

Figures from the 2011 National Diet and Nutrition Survey for England showed that men and women were consuming an average of 9.3g/day and 6.8g/day. It was estimated that 75% of this salt comes from processed foods such as ready meals; cheese, crisps, bread, biscuits and processed meats, 15% from salt naturally found in food, and 10% is added during cooking or at the table **(Table 1)**.

Table 1. Source of dietary salt

Source of Intake	Contribution to daily intake (%) UK	India*
Processed Food	75*	5-15
Naturally Present	15	Not available
Added (cooking/table)	10	85-90*

- Number of cases of stomach cancer due to salt 14%** or 1050 per year. This number is preventable by reducing salt to 6g/day (max). World Cancer Research Fund (WCRF): (https://www.nhs.uk)

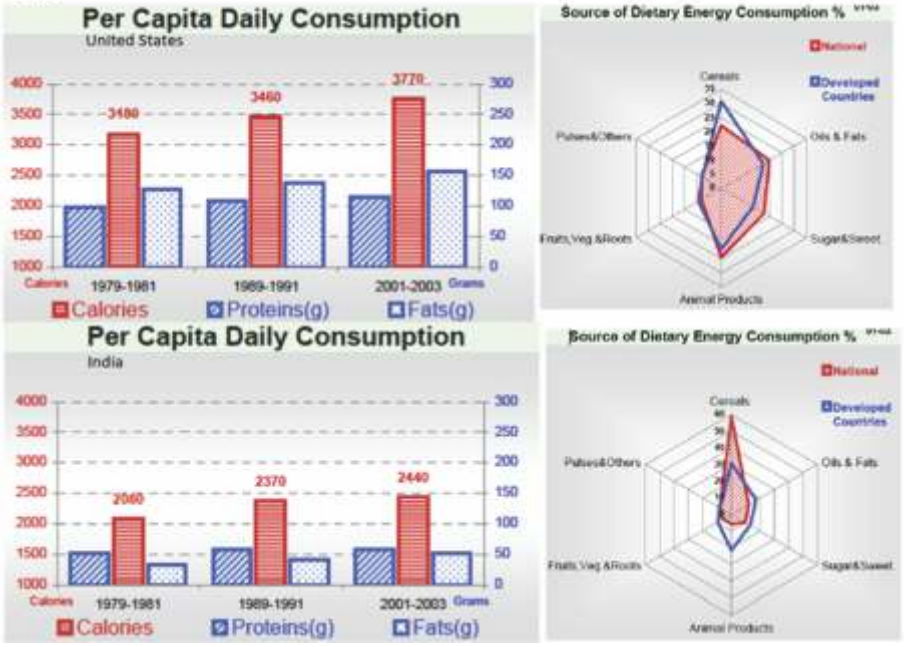
* Mostly added during cooking

Indian dietary practices require salt to be added during cooking; this contrasts with most western habits where salt is added at the table after food has been completely cooked (Michigan Business School, 2003 Case study). Salt added to cooked food is more than 80% of total intake (9-12g per day) and a risk factor.

Even though Indian diets differ significantly **(Fig 3)** from the western consumption patterns, dietary guidelines continue to mimic the latter. In an article (Indu Mani, Anura V Kurpad: Indian J Med Res. 2016, 144(4): 507-514), a case is made for serious introspection on dietary guidelines for Indians. The persistent stress on reduction of dietary, saturated and trans fats and a reluctance to accept any impact from high carbohydrate diets needs review. Further while considering regulatory measures it is critical that they are not addressed through the lens of western dietary habits.

Image © iStock.com/indiaphotos

FIG. 3



Conclusion:

In accordance with the Act and global practice, separate groups are to conduct risk assessment and risk management; sharing scientific evidence and decisions taken in an open and transparent manner. The functional roles are separated to remove conflicts of interest or prejudice.

Risk assessment – specifically exposure assessment data - indicates that pre-packaged foods do not contribute significantly to the total intake of fat, salt and sugar. The discretionary use of these nutrients in home cooking and consumption of unpackaged or unlabeled foods are major contributors to high intakes.

Risk management requires selecting the most impactful measure of several options available, including a cost benefit analysis. Since the major contributory source to high intakes is home cooking (culinary practice), education and awareness should be the prime measure to reduce the risk factors. Graphic labelling applicable to only pre-packaged foods is unlikely to yield significant reductions and impact the disease burden. A measure taken contraindicated by scientific evidence (exposure analysis) would mislead stakeholders into thinking that the disease burden is mitigating.

The risk management option to educate consumers on dietary practices at home and elsewhere calls for well-targeted nutrition messaging. The various initiatives of Safe and Nutritious Food (SNF) at home, school, workplace and eating out are the right platforms for call to action and designed surveys conducted periodically to measure behavior modification. The TV commercial "Aaj Se Thoda Kam", the Eat Right Movement by FSSAI is a brilliant example of a powerful non-regulatory measure, to modify consumer behavior in a sustainable way.

REPORT OF WORKSHOP ON

CAPACITY BUILDING: FOOD REGULATORY PROCESS RESPONDING TO REGULATORY NOTICES/NOTIFICATIONS

By
Ms. Anuja Rawool,
Food Scientist, PFNDAI

PFNDAI has organised two days Workshop on Capacity Building: Food Regulatory Process on 7th &8th March 2018 at Hotel Kohinoor Continental Mumbai. The workshop intends to explore the quality of response in terms of presentation of the scientific evidence, international context of adopted limits imposed, domestic agricultural practices and distribution systems and time required for compliance. The 2-day workshop was a capacity building model designed on a refresher-application mode, highlighted the key procedural statutes of the Act and how these were to be used in the framing of standards and specifications.

The workshop was Inaugurated by Dr. Joseph Lewis (Vice-Chairman Regulatory Affairs Committee PFNDAI). He spoke on Risk Management: Rule Making Process of US: FDA and also section related to Risk Management (FSSA).He highlighted the difference in Hazard and Risk based rulemaking. He also gave an overview on the Fats and gave an exposure on Trans fat presented in different food products.

Dr.Shatadru Sengupta (Senior Director Legal-Hardcastle Restaurants Pvt Ltd) gave an overview on Current Terms in Notification/Meaning. He spoke on The Lexicon of Indian Food Legislation where he introduced the audition about the Indian Food Law, making of rules and regulations. He also highlighted on the Guidelines and Duties and functions of Food Authority & General principles to be followed in Administration of Act.

The Session II was on Notification Response (Advertisement & Claims) where Dr. Lewis spoke on Harmonised Framework on Claims in which he told delegates about responding to a regulation & making compliance consistent, predictable and also about how to reduce the ambiguity in the texts. Further he introduced about the Frame work of Nutrition Claims and Health Claims. He also gave distinctions between Dietary Guidelines and Disease risk reduction & highlighted about health maintenance, immunity&anti-agening and summarized on Regulatory Quality.

Dr. Akanksha (Corporate Regulatory Affairs, Omni Actives) gave an overview on Nutrient Content Claims where she spoke on Improving lives; enhancing Nutrition & wellness using science and innovation. Also highlighted some points on Nutrition and how nutrient content claims can be made.

Mr. Rajendra Dobriyal (Director – Regulatory Affairs (South Asia), HUL) introduced about the Nutrient Comparative Claims and spoke on Nutrition Claims and there types and Conditions for the Comparative Claims. He also highlighted briefly about the Nutrient content claim & Nutrient Comparative claim – Global.

The last speaker for this session was Dr. Ramasubramanian (Director, VR FoodTech) who spoke on Nutrient Function Claim and gave definition about the Nutrient Ingredient, Fortification Regulation and other Functional claims. He also highlighted about the Requirements of Nutrient Function claim & what are Permitted Nutrition Function claims and further gave criteria about how nutrient function claims can be made. He also spoke on Substantiation of Nutrient – Function claim and gave specification of the Market survey done for Nutrition – Function Claim.

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The Session III was conducted on Notification (Advertisement & Claims) where Mr.Shaminder Pal Singh (Pepsico) spoke on Other Functional Claims where he introduced about FSS (Packaging & Labelling) Regulations 2011 and also defined about the Health Claims and also highlighted on Potential Functional Properties and Positive Health Benefits for some commonly consumed foods and further spoked on Conditions for Health Claims including OFCs (Codex Perspective).

Mrs. Madhavi Trivedi (Associate Director – Nutrition and Scientific Affairs Kellogg India) spoke on Health Claims Disease Risk Reduction Claims gave an overview on Frame work of claims & how are they defined. Further she spoke on Product Claims & Criteria for making the Health claims.

The last session on the day i.e. Session IV Claims Approval Process was introduced by Ms.Shilpa Telang (Head Business Tata Nx Tata Chemicals) who briefed about Regulation outline process of getting new nutrient function and reduction of disease risk claim approved by FSSAI. She also gave a Global Overview of requirements for making health claims. She also gave information about Health claim application and approval procedure in Europe.

Mr. Kiran Desai (Regulatory Affairs Manager RB) in his presentation on Non-Addition Claims: Statement of Fact, Dietary Guidelines and introduced about Claims relating to Dietary Guidelines and highlighted on Dietary Principles & ICMR Dietary Guidelines.

Mr. V Mohan (Chairman Regulatory Affairs Committee PFNDAI, Partner Inttl Advocare) spoke on Advertisements & Media: Requirements under Notification where he highlighted some key points on Relevant Legislation, Applicable Laws, Rules and Regulations. He also gave an idea about what are the Conditions, codes and guidelines of advertising.

Mr.Virendra Landge (Manager Regulatory Compliance and Advocacy Gurgaon, Coca Cola) spoke on Legal Metrology where he briefed on the Legal Metrology (Packaged Commodities) Rules, 2011 clause 6 (1)Explanation III The clauses of Food Safety and Standards(Packaging and Labelling) Regulation. He also summarised about the increased font sizes applicable to LM declaration & other declarations that will be done as per Food Safety and standards (Packaging and Labelling) regulation, 2011.

Mr. Kalyan Vadlamani (Counsel-India and South West Asia at Coca Cola) spoke on New Plastic Waste Management Rules & EPR briefed on what are the gaps in the old PWM law and there is a need for new PWM law & EPR. Further he spoke on the call outs which came in 2016 regarding PWM rules and what are the extended producer's responsibilities.

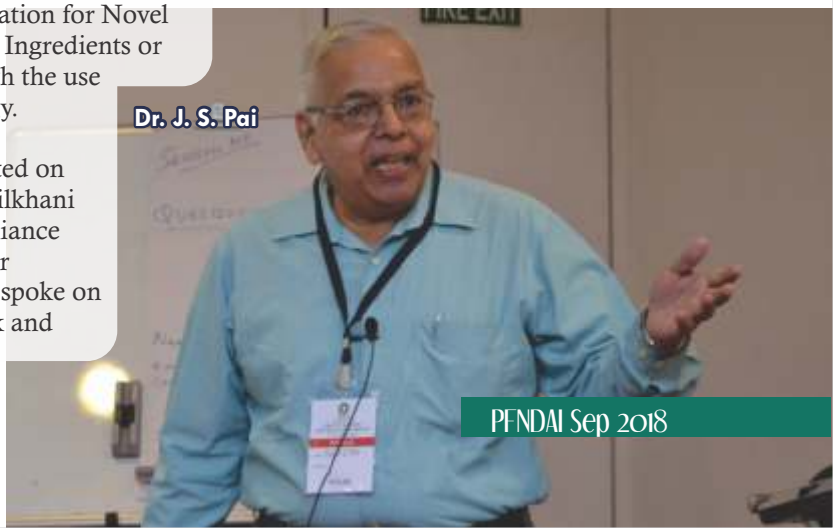
Ms. Parna Dasgupta (Director, Regulatory & Government Affairs Kellogg India) presented on Non Specified Foods: Identifying these foods and clarifying the process of approval and briefed about the History & the Journey and the Evolution under the new regime. She also talked about Specific definition and criteria for Novel Foods under Nutra Regulation and later she highlighted about Additional Information for Novel food or novel food Ingredients or food processed with the use of novel technology.

Dr. J.S. Pai presented on behalf of Dr. V. Jailkhani (Regulatory compliance Manager, Schreiber Dynamix Dairies) spoke on Antibiotics in Milk and briefed about the antibiotics used in veterinary medicines & 7 elements for appropriate Regulatory framework. Further spoked about Comprehensive Antibiotic Residue Surveillance program & highlighted about what are the Steps to Prevent Antibiotic Residues.

The next speaker for this session was Dr. Javeed Mulani (Manager - Supply chain / QA (Protein) Vista Processed Foods) presented on Antibiotics in Poultry. He highlighted about the sustainable food production and antibiotics & what antimicrobial use in animals & also the common antibiotics use in poultry industry. He overall gave an idea about what are the antibiotics and what are draft notifications & regulations coming out by FSSAI regarding the Antibiotics.

Dr. Shatadru Sengupta (Senior Director Legal-Hardcastle Restaurants Pvt Ltd) in his presentation briefed about the basic parameters of ReFoC later about the Regulatory Compliance. He overviewed on the objectives of ReFoC & highlighted about Waste reduction and recycling (including Food sharing & food donations).

The speakers at the end were felicitated with a token of appreciation from PFNDAI and were extended a vote of thanks along with all the other delegates for making the workshop a successful and productive event. The Vote of Thanks was given by Dr. Pai.


Dr. J. S. Pai


Audience


Audience


Dr. Akanksha


Dr. J. I. Lewis


Dr. Mulani


Dr. Ramasubramanian


Dr. Sengupta S.


Mr. Adsule


Audience


Audience


Audience


Audience


Mr. Dobryal


Dr. Kiran Desai


Mr. Landge

Mr. Mohan


Mr. Shaminder Singh


Mrs. Trivedi


Audience


Audience

Audience


Audience


Mr. Vadlamani


Ms. Dasgupta


Ms. Telang


Panel


Panel

REGULATORY ROUND UP

By
Dr. N. Ramasubramanian,
VR Food Tech Private Limited
n.ram@vrfoodtech.com

Dear Readers

Please find below the new regulations, advisories, orders, etc put up by FSSAI since last round up. The grapevine says a big tug-of-war between the stakeholders is on and will be some time before "Advertisement and Display" regulation will see the light of the day. FSSAI has started placing draft CODEX regulations for wider comments. It can be a great source of learning. Moreover, CODEX regulation has become the basis for developing Indian regulation.

In case not able to open the hyperlink, please copy the hyperlink and open in a separate browser.

In the last round up, the link to the ICMR report on "Tolerable Upper Limit" (TUL) on vitamins and minerals was provided. The special committee was mandated to determine the TUL for all vitamins and minerals (VM) and also provide an opinion on the upper limit of 1 RDA specified for VM .

TUL is the maximum level a vitamin or a mineral that can be taken on a daily basis without any adverse effect. The report deals only with Vitamin and Mineral (VM) supplements and foods which are consumed without medical advice or unsupervised intake.

Thus, the report includes health supplements, foods for special dietary uses, standard foods and proprietary foods with VM. The report reviews the available data and suggests TUL for a number of VM. The report clearly states that TUL should not be used for setting standards and an upper limit of 30% of RDA is suggested in food products.

Need to wait to find out the kind of influence this report will have on FSSAI in deciding permitted upper limit of VM in foods.

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For details, please contact our India partner VR Food Tech Private Limited, Mumbai.
Dr. Ashlesha Parchure: ashlesha.parchure@vrfoodtech.com

DECERNIS

Standards

Draft Notification

A draft regulation related to standards frozen vegetables like peas, cauliflower, spinach, etc. This replaces general standard of frozen vegetables.

CODEX draft document on " Code of Practices on Fish and Fishery Products", "Guidance for the management of (micro)biological foodborne crises/Outbreaks" and "General Principles of Food Hygiene (CAC/RCP 1-1969) and its HACCP ANNEX" . The general principles of food hygiene would be very useful for those who are planning to implement pre requisite programme or GMP in their organization. The readers are welcome to send in their comments to FSSAI.

Draft regulation related to the standards of frozen vegetables like peas, cauliflower, spinach, etc. The standards are more elaborate as compared to the present general provision on frozen vegetables.

FSSAI, in its quest for building capacity, has decided to outsource safety audit of food business operators to auditing firms. A regulation is published detailing the process of accrediting auditing agencies to audit on behalf of FSSAI.

The latest list of FSSAI approved private laboratories along with validity of accreditation. When you choose the laboratory, ensure the laboratory is accredited for the required parameters and NABL certification is valid.

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RESEARCH IN HEALTH & NUTRITION

Image © iStock.com/4kodiak

Tea may help slow reduction of 'good cholesterol' as we age

IFT Weekly July 4, 2018

A study published in the Journal of the American Heart Association suggests that drinking at least a cup of tea a day may help your body cling to heart-helping "good cholesterol" as you age.

Previous research has suggested more tea may significantly lower the risk of heart disease and stroke by reducing low-density lipoprotein, or LDL, the "bad" cholesterol that can build up in arteries. What's uncertain is tea's effect on high-density lipoprotein, or HDL, the healthy cholesterol that helps eliminate LDL. Some studies found that tea significantly increased HDL, while others found no consequence at all.

The study monitored more than 80,000 people from the Kailuan community of Tangshan, China, over a six-year period. It found regular tea drinkers had a slower age-related decrease in HDL levels. That decline was linked to an eventual 8% decrease in cardiovascular risk among those in the study.

Green tea had a slightly stronger effect than black tea, but both are full of polyphenols and catechins, two antioxidant compounds recognized for their anti-inflammatory properties. The researchers did not collect data on coffee, which is not popular in that area of China.

The link between greater tea consumption and slower HDL decreases appeared the most pronounced in men and in people aged 60 and older who typically had higher heart disease risk factors such as tobacco use, larger body mass index, and low physical activity levels.

There were several limitations to the study, though. For example, findings were based on self-reported information about weekly or monthly tea consumption and did not reflect whether people drank more than one cup a day. The study also lacked key dietary information, including details about intake of fruits, vegetables, meat, and whole grains. In addition, the study examined people from a specific community in China that isn't representative of the nation's population at large. "However, the results represent a large cohort of individuals living in China who have a wide range of tea intakes and a low intake of coffee," the study's authors noted.

How a turmeric compound could treat glaucoma

Medical News Today 25 July 2018 By Maria Cohut

In glaucoma, the optic nerve — or the nerve that links the eye and the brain — becomes damaged due to fluid buildup in the eye, which puts too much pressure on the nerve. One way of managing this condition is using prescription eye drops.

A common way to treat certain types of glaucoma is using eye drops, which help prevent further loss of vision by regulating eye pressure.

Image © iStock.com/AD077

Recent research, conducted at University College London and Imperial College London, both in the United Kingdom, suggests that a turmeric derivative — curcumin — could treat the early signs of glaucoma effectively.
Moreover, the researchers note that there is a workable method that could allow curcumin to be delivered to the back of the eye directly using eye drops. This turmeric derivative is notoriously poorly soluble, but a new technique developed by the team would allow specialists to overcome this issue.

"Curcumin is an exciting compound that has shown promise at detecting and treating the neuro-degeneration implicated in numerous eye and brain conditions from glaucoma to Alzheimer's disease, so being able to administer it easily in eye drops may end up helping millions of people." Lead study author Prof. Francesca Cordeiro. The researchers' findings are now reported in the journal Scientific Reports.

A special way of delivering curcumin
One of the first effects in glaucoma is the loss of retinal ganglion cells, which are a type of neuron found near the eye's retina, or the tissue that lines the back of the eye. Retinal ganglion cells receive visual cues, and they play a key role in healthy vision. The loss of these cells leads to the deterioration of eyesight, but so far, scientists have not identified a viable means of preventing retinal ganglion cell loss in the initial stages of glaucoma onset. In the new study, however, Cordeiro and colleagues noticed that curcumin eye drops did manage to reduce loss of retinal cells in a rat model.

Previous research has indicated that this turmeric derivative has a protective effect over retinal ganglion cells, but in these cases, the substance was administered orally. However, since curcumin has poor solubility — meaning that it dissolves and gets absorbed into the bloodstream with difficulty — oral administration is no easy feat to perform.

So, in order to overcome this difficulty, the researchers developed a special nanocarrier made of substances safe for human use, and which have already been incorporated into some eye products.

This nanocarrier increases curcumin's solubility almost 400,000 times, and it can contain much higher quantities of the substance than other products under development. Moreover, it can deliver the substance right where it is needed via eye drops. At first, Cordeiro and team performed in vitro tests of the curcumin-loaded nanocarrier, and they then repeated them in vivo, on a rat model with impending retinal ganglion cell loss.

'Major contribution' to health
Their trials were successful; after applying the innovative eye drops to the rats twice per day over a period of 3 weeks, they noticed that retinal cell loss had been significantly reduced, when compared with retinal cell loss in a control group of rats that had not received this treatment. Moreover, the team was glad to observe that the curcumin-loaded nanocarrier produced no eye irritation or inflammation.

Now, the researchers aim to see if curcumin — delivered via the specially designed nano-carriers — could also be used to diagnose Alzheimer's disease; the substance is known to bind to amyloid beta, which is the protein that forms tell-tale deposits typical of Alzheimer's in the brain.

"We are now researching diagnostic uses for these eye drops alongside other ways to visualize the retina," says co-lead study author Dr. Ben Davis, "as eye tests can be an opportunity to detect signs of neuro-degeneration with a simple, non-invasive test."

"As we live longer, diseases such as glaucoma and Alzheimer's are steadily increasing," adds Cordeiro. "We believe our findings could make a major contribution at helping the lives of people affected by these devastating diseases."

New study shows certain video games can improve health in children with obesity

Science Daily July 20, 2018

A new study from LSU's Pennington Biomedical Research Center showed for the first time that video games, in combination with fitness coaching and a step tracker, helped overweight children lose weight, lower their blood pressure and cholesterol and increase their physical activity.

The results of the GameSquad trial are available online and will be published in an upcoming Special Issue of the journal Pediatric Obesity in a scientific paper titled: "Home-based exergaming among children with overweight and obesity: a randomized clinical trial." "Kids who gain excessive weight and are not physically active can develop early signs of heart disease and diabetes.


Image © iStock.com/IPGGutenbergUKLtd

They may also struggle every day with asthma, sleep apnea, and the other psychological and health challenges that excess weight and obesity can bring," said Dr. Amanda Staiano, PhD, director of Pennington Biomedical's Pediatric Obesity and Health Behavior Laboratory and the study's primary investigator.

In Louisiana, one in every three children (35.3 percent) aged 10-17 is overweight or has obesity, and one in five (21.1 percent) has obesity, according to the Centers for Disease Control and Prevention. All are at increased risk for developing serious medical problems. Exergaming, or playing video games that require physical activity, may be able to help.
"Screens are everywhere in our lives, and they are here to stay. Kids spend half their waking hours in front of screens," said Dr. Staiano. "I'm looking for ways to use those screens -- smartphones, computers, televisions and tablets -- to incorporate more physical activity into kids' lives." The GameSquad study enrolled 46 children ages 10 to 12 who were overweight or had obesity. Half were girls and more than half were African-American. The study randomly assigned children to a "gaming" group of 23 families or a control group of 23 families.

The gaming group was encouraged to meet the national recommendations of 60 minutes per day of physical activity. The children received an Xbox 360, Kinect and four exergames (Your Shape: Fitness Evolved 2012, Just Dance 3, Disneyland Adventures and Kinect Sports Season 2) and were asked to play these at their home with a friend or family member for six months. They also received a "challenge book" to complete three one-hour gaming sessions each week and a Fitbit to track their steps each day. Each child and parent or parents also took part in regular video chats over the video game console with a Pennington Biomedical fitness coach to monitor their progress. The control group members were not asked to make any changes in their behaviour. These families received the exergames and gaming console at the end of the six-month study.

Twenty-two of the 23 families in the gaming group finished the six-month program. Children and parents in the gaming group completed 94 percent of the gaming sessions and attended 93 percent of the video-chat sessions. "When you don't intervene with kids who are overweight, often their health risk factors and health behaviours worsen over time," said Dr. Staiano. "So, unfortunately, we weren't surprised to see that kids in the control group increased blood pressure and cholesterol and decreased physical activity over the six-month period."

Children in the gaming group:
• Reduced their body mass index by about 3 percent while the control group increased their BMI by 1 percent.
• Reduced their cholesterol by 7 percentiles while the control group increased cholesterol by 7 percentiles. In other words, the kids in the gaming group remained in the healthy range. The increase in the control group's cholesterol levels pushed them into the borderline category for high cholesterol.
• Increased their physical activity by 10 percent while the control group decreased their physical activity by 22 percent.
• Increased their self-efficacy, or their belief about personal control, toward physical activity, which predicts exercise adherence.

This work was supported by the American Heart Association and two centre grants from the National Institutes of Health: in part by U54 GM104940 from the National Institute of General Medical Sciences of the National Institutes of Health, which funds the Louisiana Clinical and Translational Science Center, and in part by Pennington Biomedical's Nutrition and Obesity Research Center Grant # P30DK072476 titled "Nutrition and Metabolic Health Through the Lifespan" sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases.
The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

High fruit and vegetable consumption may reduce risk of breast cancer

Science Daily July 19, 2018

Women who eat a high amount of fruits and vegetables each day may have a lower risk of breast cancer, especially of aggressive tumours, than those who eat fewer fruits and vegetables, according to a new study led by researchers from Harvard T.H. Chan School of Public Health.

In their findings, cruciferous vegetables such as broccoli, and yellow and orange vegetables, had a particularly significant association with lower breast cancer risk.

"Although prior studies have suggested an association, they have been limited in power, particularly for specific fruits and vegetables and aggressive subtypes of breast cancer," said first author Maryam Farvid, research scientist in the Department of Nutrition. "This research provides the most complete picture of the importance of consuming high amounts of fruit and vegetables for breast cancer prevention."
The study was published online July 6, 2018 in the International Journal of Cancer.

The researchers analyzed diet questionnaires submitted every four years by participants in the Nurses' Health Study (88,301 women, starting in 1980) and the Nurses' Health Study II (93,844 women, starting in 1991). Data on other potential breast cancer risk factors such as age, weight, smoking status, and family cancer history were taken from biennial questionnaires. They found that women who ate more than 5.5 servings of fruits and vegetables each day had an 11% lower risk of breast cancer than those who ate 2.5 or fewer servings. (A serving is defined as one cup of raw leafy vegetables, half a cup of raw or cooked vegetables, or half a cup of chopped or cooked fruits.)

To find out whether the benefits of fruit and vegetable consumption differed among various types of breast cancers, the researchers conducted an analysis by tumour hormone receptor status and molecular subtype. They found that higher consumption of fruits and vegetables was particularly associated with lower risk of more aggressive tumours including ER-negative, HER2-enriched, and basal-like tumours.

Previous work by this research group linked reduced breast cancer risk with higher fibre intake, but the benefits of fruits and vegetables found in this study appear to be independent of their fibre content, according to the researchers. This suggests that other constituents of these foods, such as antioxidants and other micronutrients, may also be important in reducing breast cancer risk.

"While a diet with lots of fruits and vegetables is associated with many other health benefits, our results may provide further impetus for women to increase their intake of fruits and vegetables," said senior author Heather Eliassen, associate professor at Harvard Medical School and Harvard Chan School and associate epidemiologist at Brigham and Women's Hospital. Other Harvard Chan authors included Bernard Rosner, Rulla Tamimi and Walter Willett.

While men lose more weight on low-carb diets, women show improved artery flexibility

Study first to show that low-carb diets can improve blood flow in as little as four weeks
Science Daily July 17, 2018

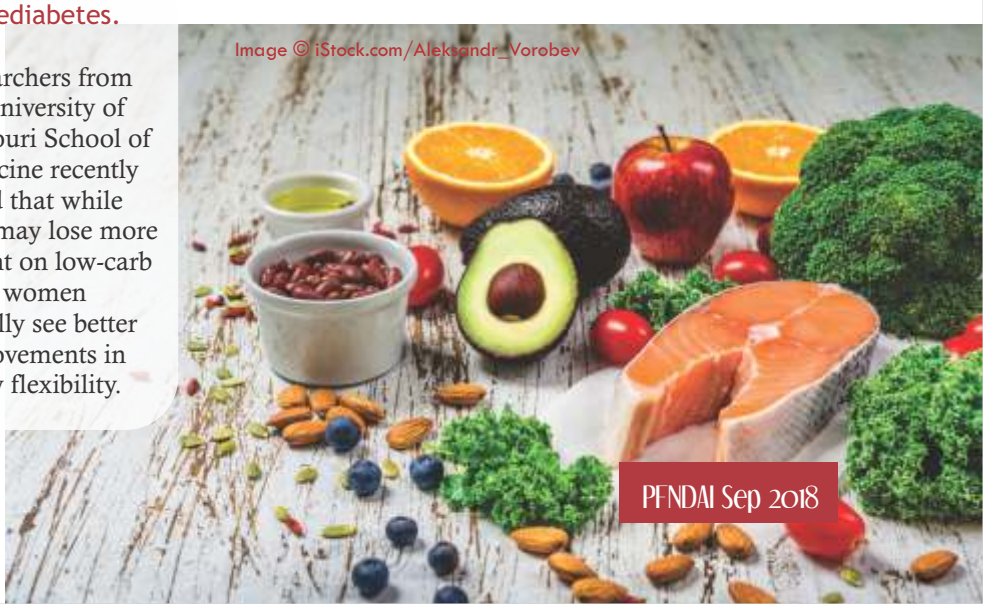
According to the Centers for Disease Control and Prevention, an estimated 1 out of 3 American adults live with higher than normal blood sugar levels known as prediabetes.

Researchers from the University of Missouri School of Medicine recently found that while men may lose more weight on low-carb diets, women actually see better improvements in artery flexibility.

It's a finding that may help pre-diabetic women reduce their risk for heart disease through a low-carb diet.

"Previous research has shown that as women age, their blood vessels stiffen more so than men, putting them at an increased risk of heart disease," said Elizabeth Parks, PhD, professor of nutrition and exercise physiology at MU. "Contrary to what you may think, you actually don't want stiff blood vessels. Rather, you want flexible vessels that expand slowly as the blood flows through them. Our study found that low-carb diets helped reduce the stiffness of arteries in women, which can, in turn, reduce their risk of developing serious heart conditions."

To illustrate this, Parks compares good vessels to be like a rubber hose and aging causing vessels to become stiff, similar to a plastic pipe. When you pour water through a rubber hose, the hose bends and flexes as the water makes its way through. When you pour water through a solid pipe, the water travels through the pipe quickly. In the human body, for good health, we want flexible, pliable, resilient arteries. As part of the study, 20 middle-aged, pre-diabetic men and women were given carb-restricted meals provided by the MU Nutrition Center for Health for two weeks and were supplied meal planning instructions for an additional two weeks.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Over the four-week period, the men in the study lost 6.3 percent of their body weight, while women lost 4.4 percent. However, using an arterial stiffness measurement called pulse wave velocity, the women showed reduced blood flow speeds of 1 meter per second, while men showed no changes in blood flow speed.

“Vascular stiffness is a natural process of aging that can be accelerated by obesity, insulin resistance and metabolic syndrome," said Parks, who also serves as associate director of the MU Clinical Research Center. "Our study is the first to demonstrate that weight loss can reduce arterial stiffness in as little as four weeks and that dietary carbohydrate restriction may be an effective treatment for reducing aortic stiffness in women."


Image © iStock.com/phive2015

Anti-obesity drug derived from chili peppers shows promise in animal trials

Science Daily July 17, 2018

A novel drug based on capsaicin, the compound that gives chilli peppers their spicy burn, caused long term weight loss and improved metabolic health in mice eating a high fat diet, in new studies from the University of Wyoming School of Pharmacy. The drug, Metabocin, was designed to slowly release capsaicin throughout the day so it can exert its anti-obesity effect without producing inflammation or adverse side effects.

"We observed marked improvements in blood sugar and cholesterol levels, insulin response, and symptoms of fatty liver disease," reported Dr. Baskaran Thyagarajan, lead investigator, describing how Metabocin reversed many damaging effects of the high fat diet. He presented the results this week at the annual meeting of the Society for the Study of Ingestive Behavior, the leading international conference of experts on food and fluid intake.

The research team developed Metabocin, which can be taken orally, to target receptors called TRPV1 (transient receptor potential vanilloid subfamily 1) that are found in high numbers in fat cells. Stimulating the TRPV1 receptors causes white fat cells to start burning energy instead of storing it, which, in theory, should cause weight loss. An important question for the researchers was whether the drug remains effective when used long term, and whether adverse effects would outweigh its benefits. The mice in this experiment remained on the drug for 8 months, maintaining the weight loss with no evidence of safety problems. Additional ongoing experiments will see how long that can be maintained.

"It proved safe and was well tolerated by the mice," Thyagarajan concluded. "Developing Metabocin as a potent anti-obesity treatment shows promise as part of a robust strategy for helping people struggling with obesity."
Although these results may give some people the idea to eat more spicy food to lose weight, that would not work as intended. Most of the capsaicin in spicy food is not well absorbed into the body so it would not produce these effects. The researchers specifically modified the capsaicin in Metabocin for proper absorption and sustained release.

Obesity is a growing public health concern, resulting in metabolic diseases including type 2 diabetes, hypertension, atherosclerosis and heart diseases. Currently one in three individuals world-wide is either overweight or obese. Exercise and diet are the standard recommendation, but those are difficult for most people to maintain in the long term, and rebound weight gain usually occurs. The Wyoming researchers advocated for continuing to pursue medical options that stay effective in the long term to counter obesity and its metabolic impacts, to assist people seeking to maintain a healthier weight.

An orange a day keeps macular degeneration away: 15-year study

Science Daily July 12, 2018

A new study has shown that people who regularly eat oranges are less likely to develop macular degeneration than people who do not eat oranges.

Researchers at the Westmead Institute for Medical Research interviewed more than 2,000 Australian adults aged over 50 and followed them over a 15-year period.


Image © iStock.com/VikramRaghuvanshi

The research showed that people who ate at least one serving of oranges every day had more than a 60% reduced risk of developing late macular degeneration 15 years later.

Lead Researcher Associate Professor Bamini Gopinath from the University of Sydney said the data showed that flavonoids in oranges appear to help prevent against the eye disease. "Essentially we found that people who eat at least one serve of orange every day have a reduced risk of developing macular degeneration compared with people who never eat oranges," she said.

"Even eating an orange once a week seems to offer significant benefits. "The data shows that flavonoids found in oranges appear to help protect against the disease." Associate Professor Gopinath said that until now most research has focused on the effects of common nutrients such as vitamins C, E and A on the eyes. "Our research is different because we focused on the relationship between flavonoids and macular degeneration.

"Flavonoids are powerful antioxidants found in almost all fruits and vegetables, and they have important anti-inflammatory benefits for the immune system. "We examined common foods that contain flavonoids such as tea, apples, red wine and oranges. "Significantly, the data did not show a relationship between other food sources protecting the eyes against the disease," she said.

One in seven Australians over 50 have some signs of macular degeneration. Age is the strongest known risk factor and the disease is more likely to occur after the age of 50. There is currently no cure for the disease. The research compiled data from the Blue Mountains Eye Study, a benchmark population-based study that started in 1992.

It is one of the world's largest epidemiology studies, measuring diet and lifestyle factors against health outcomes and a range of chronic diseases. "Our research aims to understand why eye diseases occur, as well as the genetic and environmental conditions that may threaten vision," Associate Professor Gopinath concluded.

'A serious health concern': Undeclared allergens are causing accidental allergic reactions

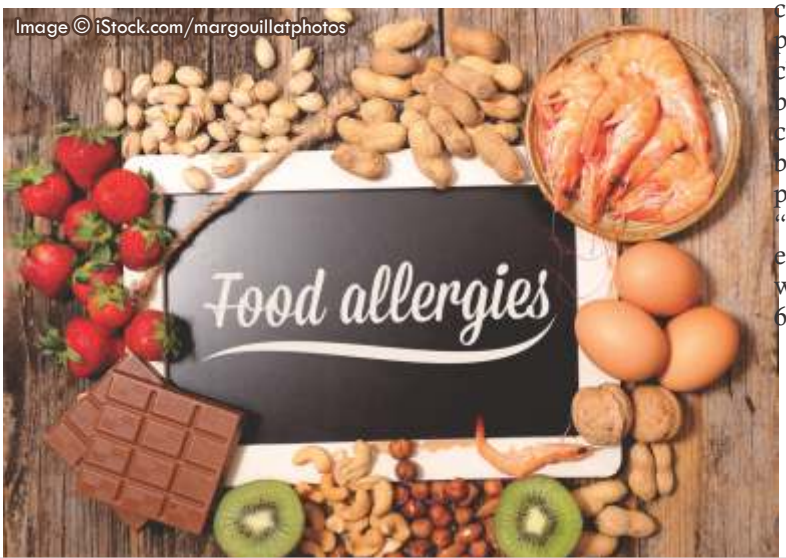
By Niamh Michail 04-Jul-2018 – Food Navigator Asia

Undeclared allergens at 'concerning' concentrations in packaged food are causing accidental allergic reactions, according to a study. "There is a perception that food allergens are no longer an issue," says one expert. "This is not the case."

Testing foods for which consumers reported experiencing an allergic reaction, the scientists found 37% of the 51 products analysed had between one and four 'culprit allergens' that, according to the ingredient declaration, were not present. All of the allergens detected are regulated in the EU and should have been declared. They also found anomalies in how manufacturers are using the precautionary allergen label (PAL). For instance, none of the six products that contained peanut allergens or the two products with egg had a PAL statement but the products that did warn consumers about the possible presence of peanut, egg and soy contained no allergens.

Under the EU's Food Information for Consumers regulation, food manufacturers must label 14 allergens – peanuts, tree nuts, soybeans, mustard, eggs, lupin, milk, fish, cereals containing gluten, sesame, celery, sulphur dioxide, molluscs and crustaceans. "Both [individuals'] neglect of PAL statements and omission of using a PAL statement by food manufacturers are contributing to accidental reactions," the scientists conclude.
"Overall, the study shows that [currently] choosing a safe food product is problematic for allergic patients, especially for the majority that have multiple allergies."

'Serious health concern'
Peanut, milk and sesame showed the highest levels of allergen while milk was the most frequently detected allergen. Levels ranged from one part per million (ppm mg/kg) of allergenic protein in the consumed food to 5000 ppm.
"The concentrations detected in this study posed a serious health concern for the milk allergic population as four out of eight products estimated a high (10-25%) to extremely high (above 40 %) risk for objective allergic reactions. "These results are important as milk is one of the allergenic foods with widespread use in production of foods and the prevalence of milk allergy is considerable, particularly in childhood." Bread and bread rolls, cookies and cakes, chocolates and bonbons and meat products were reported "relatively often and in equal fashion", they write, accounting for 62 out of 151 products.



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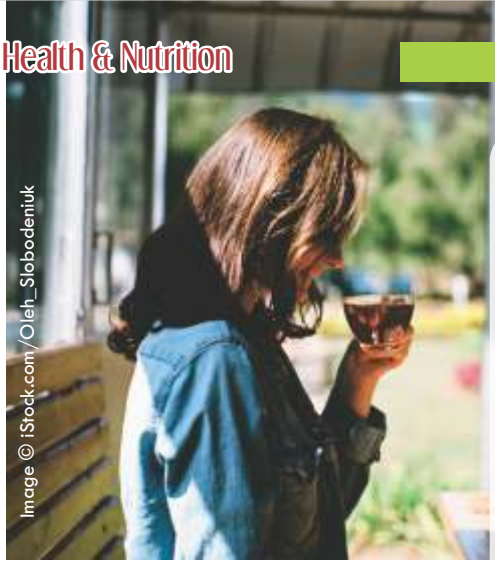
Image © iStock.com/Oleh_Slobodeniuk

Black tea aroma inhalation may reduce stress and improve mood:Japanese study

By Cheryl Tay 28-Jun-2018 - NutraIngredients Asia

Inhaling the aroma of black tea may help to lower stress levels after a stressful task and improve mood prior to experiencing mental stress according to emerging research from Japan.

Scientists have been looking into not just how consuming certain foods can affect one's health, but how food flavour components influence stress-induced negative brain functions. Researchers at the University of Shiuoka, Chubu University, Mitsui Norin Co., Ltd and Tokai University conducted a study to determine the alleviating effects of two kinds of black tea aromas on physical and psychological stress.

Maths and mental stress

They recruited 18 healthy volunteers (five males, 13 females) aged 20.4 to 21.2 years, who were told to avoid consuming anything except water for three hours prior to the start of each trial. To induce stress in the participants, the researchers used the Uchida-Kraepelin test, a psycho-diagnostic test involving arithmetic tasks to be solved within 30 minutes. This was split into two 15-minute sessions. In between sessions, participants had one minute to inhale either black tea aroma, or be exposed to warm water as a control.

The researchers then used salivary chromogranin-A (CgA, an acidic protein secreted in response to stress) levels as a stress marker when determining the effect of inhaling black tea aroma in the participants. They reported that compared to those in the control group, those who inhaled black tea aroma (Assam and Darjeeling, in this case) had lower salivary CgA concentration levels after half an hour of mentally stressful tasks. They added that both the teas had the same effect, despite Darjeeling tea aroma having a higher concentration of anti-stress components, including hexanal and hexanol, which have been reported to reduce mental stress response in rats, and Linalool, which has sedative effects.

Physiological and psychological factors

The researchers further wrote: "Another factor to consider for future studies could be to explore gender differences in the anti-stress effects of black tea aroma, for which more male participants will be needed. "It will also be interesting to compare this data with other kinds of tea odours by multiple indexes of autonomic nervous system and central nervous system and activities." While actually drinking tea has been associated with various mental health benefits, including lowered Alzheimer's risk, increased alertness and stress reduction , the impact of tea aroma inhalation has not been as extensively researched.

In the current study, the researchers concluded: "Inhaling black tea aroma induced lower salivary CgA concentration levels after 30 minutes of mental stress load tasks, compared with water odour condition. "This anti-stress effect of black tea aroma did not differ between the two types of tea even though the concentration of the anti-stress components in Darjeeling tea aroma was higher than in Assam aroma. On the other hand, Darjeeling tea aroma decreased the tension and / or anxiety score immediately after the first exposure.

However, the researchers warn these products are not necessarily more dangerous than others as the higher rate of allergic reactions may come from the fact they are eaten more frequently. According to the Dutch food consumption survey, for instance, biscuits, bread and sweets are eaten on 40 to 93% of the reported days compared to 11 to 25% for soups, crisps and snacks.
Food law expert Luca Bucchini, who participated in the University of Manchester's integrated approaches to food allergen and allergy management (iFAAM) project, said while more data is needed to assess the situation in other member states, it would be reasonable to expect a similar situation across the EU. "Despite the efforts of industry, the food allergen problem has not been solved. Recall data, in fact, point to the same fact, but there is a perception that food allergens are no longer an issue. This is not the case." Bucchini would like to see the EU put into place "proportionate rules for precautionary labelling". "Businesses also need guidance, especially smaller businesses," he added.

This study is not the first to flag the problem of undeclared allergens in food. In 2015, Nordic authorities in Sweden, Norway, Finland and Denmark began cracking down on the unnecessary use of allergen advisory warnings after a review found one fifth of products were wrongly labelled. In 2014, the UK's Food Standard Agency (FSA) surveyed more than 1000 products and found that around half of the foods which claimed 'May contain…' or 'Not suitable for people with an X allergy' were free of the allergen in question.

"The above results indicated that inhaling black tea aroma may diminish stress levels caused by arithmetic mental stress tasks, and Darjeeling tea aroma tended to improve (the) mood before mental stress load. "More studies elucidating the mechanism of anti-stress responses are needed to help improve human adaptability stress…and to create a healthy and comfortable living environment."

Dietary fibre intake inversely related to depression symptoms in US adults, study suggests

By Adi Menayang
02-Jul-2018
NutraIngredients USA


Image © iStock.com/franckreporter

After analysing data from a national US survey, researchers in China suggest that dietary fibre intake may be inversely related to depression symptoms.

"When total fibre intake was at approximately 21 grams per day, the risk of depressive symptoms reached a relatively low level, which has important public health implications," the researchers wrote in their paper , due for publish in the October 2018 edition of the journal Nutrition. The results were consistent even after adjustment for a wide variety of potential confounders, they added.

The researchers from The School of Public Health of Qingdao University looked at data from the 2007 to 2014 National Health and Nutrition Examination Survey (NHANES) results, a publicly available data set of the dietary habits and nutritional status of more than 16,000 US individuals.

They were building on previous research exploring a link between dietary fibre consumption and depression symptoms, such as a 2016 study published in the same journal, which suggested that higher fibre intake among Japanese employees may result in lower risk of depression.

But the combined scientific literature on the topic reveals mixed results, with many researchers of such studies arguing that outcomes may be specific to different populations. "Thus, the purpose of the present study was to evaluate the associations among dietary intakes of total, cereal, vegetable, and fruit fibre and depressive symptoms in US adults," the researchers of this present study wrote.

Public health implications

The authors concluded that, based on NHANES data, US adults who consumed 21 grams of fibre per day were less likely to exhibit depression symptoms as defined by the survey's parameters. They evaluated dietary fibre intakes of total cereal, vegetable, and fruit fibre intakes. However, the usual intake of dietary fibre averaged only 15 grams per day in most Americans, "thus, increasing intake of the foods rich in dietary fibre may be advocated for the prevention of depressive symptoms," the researchers wrote. This conclusion mirrors that of several other studies that found a positive link between higher dietary fibre intake and lowered depression symptoms. Possible explanations on the conflicting results with other studies include the different parameters to measure depression symptoms as well as different study population demographics.

Gut-brain axis?

The underlying mechanism of dietary fibre's impact on depression "remains poorly understood," the authors added, but they postulated that dietary fibre may modulate the composition of the intestinal microbiota, in turn influencing brain function—a concept dubbed the 'gut-brain' axis. This concept is gaining more popularity not just as a subject for study by researchers, but also as a tool for dietary fibre manufacturers to market their ingredients as 'prebiotics,' fibres that can selectively feed beneficial bacteria in the gut to provide health outcomes to the host. For example, a study presented at the Probiota Americas 2018 conference in Miami last month by Dr. Monika Fleshner of the University of Colorado Boulder revealed that prebiotic supplementation in rats can armour against stress by altering brain structure. Another proposal is that dietary fibre may lower glucose levels after a meal, inhibiting the inflammatory processes caused by a blood sugar spike. "Further large-scale prospective studies are needed to confirm our findings," they added.

EPA metabolite preserves bone tissue in study

By Hank Schultz 05-Jul-2018
NutraIngredients USA

Researchers working with a metabolite of EPA have found that the compound plays a role in preserving bone tissue during an inflammatory challenge.

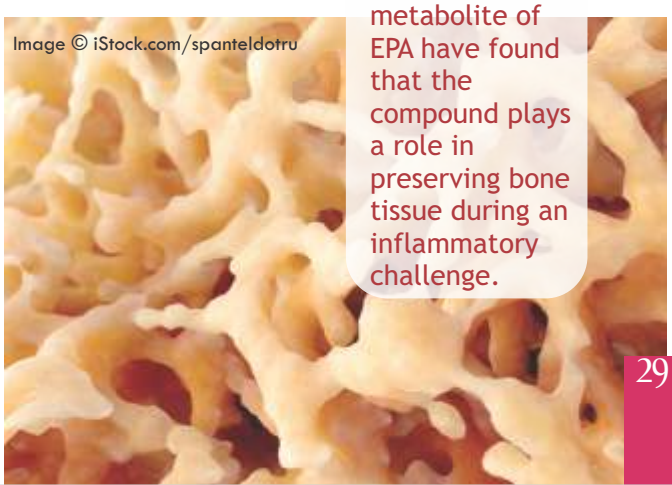
Image © iStock.com/spanteldotru

The researchers, who are associated with schools of dental medicine in the United States, Switzerland and Canada, looked at the effects of resolvin E1. Their study, titled Resolvin E1 Promotes Bone Preservation Under Inflammatory Conditions, was published in June in the journal Frontiers in Immunology. Preserving bone tissue is a key facet of dental health, especially in aging individuals and others who are prone to periodontal disease. Invasion of jaw bone tissue by pathogenic bacteria that proliferate in dental plaques is a prime reason for bone loss in the jaw and the subsequent shrinking of good treatment options for preserving a patient's existing teeth or successfully replacing them with dental implants.

Resolving E1 modulates immune system ratio

Past research has laid out a role for Omega-3s in quelling inflammatory states. And studies have also posited a role for omega-3s in bone health, a body of research that potentially could be bolstered by the periodontal study. The dental researchers used the bones of mice to measure the effects of resolving E1 in protecting bone tissue in animals given an induced inflammatory challenge. "Animal and human trials have demonstrated that regular diets rich in ω-3 PUFA result in a reduction in bone turnover and an increase bone mineral density. However, the exact mechanism of action of ω-3 PUFA on a molecular level is still not completely clear," the researchers wrote.
"Together, our results provide evidence for RvE1's direct impact on the skeletal system; regulating pathologic inflammation-induced bone resorption by control of the RANKL/OPG ratio [one way pathogenic inflammatory states can be measured] and downstream genetic events," they concluded.

Metabolites form basis of innovation
Resolvins, protectins—all of the metabolites of EPA and DHA—have become the thin wedge of innovation within the omega-3s research sphere and has been a hot topic in raw material and product innovation, too. For example, late last year Marine Ingredients, a division of KD Pharma, launched an ingredient called NutraSolv3,an oil taken from the livers of Alaska cod that is said to be rich in both EPA and DHA as well as metabolites of those fatty acids. According to the company, those include 14-HDHA (hydroxydocosahexaenoicacid), 17-HDHA and 18-HEPE (hydroxyeicosapentaenoic acid). A finished product based on these so-called 'Pre-resovling Mediators' is on the market in the form of Metagenics' SPM Active, which is a fractionated marine lipid ingredient standardized to 17-HDHA and 18-HEPE content.
Gerard Bannenberg, PhD, director of compliance and scientific outreach for the Global Organization of EPA and DHA Omega-3s (GOED), said studies like these are helpful in more fully elucidating what omega-3s are actually doing in the body.

"Apart from the roles of EPA, DPA and DHA in cell membranes, these omega-3 long-chain polyunsaturated fatty acids are the substrate for the enzymatic formation of several families of signalling substances called Specialized Proresolving Mediators (SPMs), which include the resolvins," he said. "The capacity of the body to make SPMs is necessary to maintaining a balance between appropriate host-defence and turning o inflammatory responses so that they do not cause irreversible damage to our tissues. SPMs play regulatory roles in all organs and tissues, including bone tissue. Bone loss as a result of experimental periodontitis in rabbits can be significantly prevented, and even restored, by resolvin E1. This animal model has been important in demonstrating the ability to induce the regeneration of damaged bone tissue," Bannenberg added.

Reductionism seen as issue
But one of the world's most prominent omega-3s researchers, Prof. William Harris, PhD, of the Sanford School of Medicine at the University of South Dakota, was not as sanguine about the ultimate applicability of the bone tissue cell study for nutritional products based on omega-3s. The study's reductionist approach makes relating the results back to the whole nutrient problematic, he said. "I don't know if this is physiologically relevant," Harris said. "This is a piece of the puzzle, but this is far from being able to say that omega-3s should have a bigger role in bone health." "When you feed EPA and DHA to humans, there are lots of things that are produced, like prostaglandins and leukotrienes, for example. Who's to say that this resolvin would be doing the same thing in the body in the concentrations that exist in humans?" Harris added.

FoodforKids: What's the connection between infant gut bacteria and health outcomes later in life?

By Elaine Watson 11-Jul-2018 Food Navigator USA

Babies born in the US today don't have the same microbiome as those born 100 years ago, a seemingly innocuous discovery that could prove to be a game-changer in pediatrics, claims one California-based company on a mission to rejuvenate the 'dysbiotic' American gut.

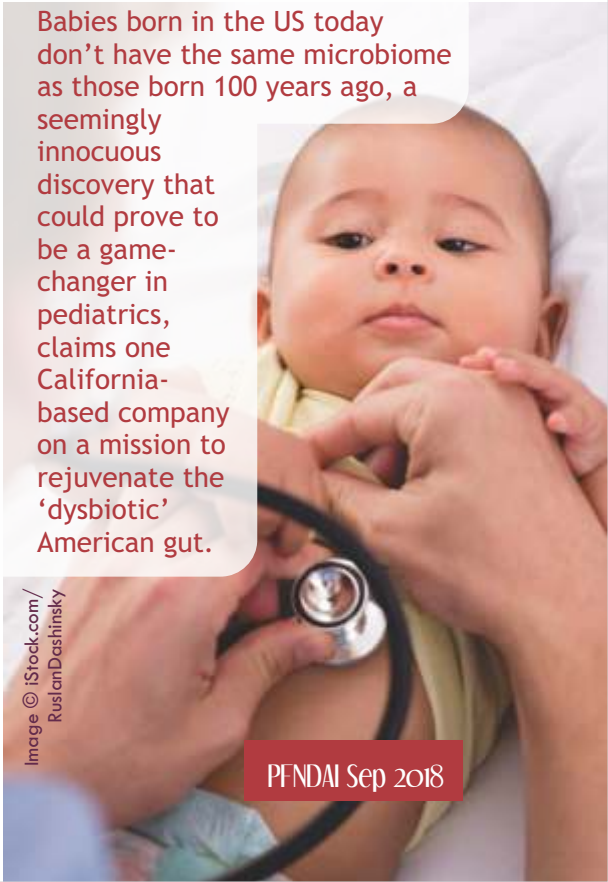

Image © iStock.com/ RuslanDashinsky

Speaking to FoodNavigator-USA after joining the line-up at our Food For Kids summit in Chicago in November, Evolve Biosystems chairman and chief science officer David Kyle PhD said the 'generational loss' of a specific variety of beneficial bacteria (B. infantis) - likely due to multiple factors including formula feeding, c-sections and antibiotic use - could increase kids' risk of developing a plethora of health problems, from allergies and eczema to type one diabetes and obesity. While correlation is not causation, we know that children with low levels of B. infantis are more likely to develop allergic and autoimmune conditions and to struggle with their weight, added Dr Kyle.

A spinoff from UC Davis, Evolve Biosystems aims to recolonize the infant microbiome with B.infantis , a probiotic which used to dominate the guts of babies born in developed countries, and still dominates those of babies in developing countries - where allergies and autoimmune disorders are far less prevalent. The B.infantis crowds out pathogenic bacteria in the gut and has been shown to digest human milk oligosaccharides in breast milk that babies are otherwise incapable of processing, improving gut barrier function, reducing intestinal permeability, and downregulating gut inflammation, explained Dr Kyle, who describes Evivo as the "first and only clinically proven probiotic for babies."

B. infantis supplementation with breast milk restores fecal p to healthier levels

He added: "Were still amazed by the magnitude of the discovery of this symbiotic relationship between B.infantis and these components in breast milk. "B infantis converts the human oligosaccharides in breast milk into short chain fatty acids that lower the p of the infant microbiome down to where it used to be in the S years ago, or what you might find in the developing world today .
" In March, the publication of a study showing the increase in infant stool p over the last years [from around 5.0 in 1926 to 6+ today, which the authors attributed to a loss of B.infantis and an increase in potentially harmful bacteria in the infant gut] had a big impact, because it is something that has really gone unnoticed."

B infantis is passed from mother to baby during vaginal birth through fecal/oral transfer (Moms poop during birth), explaining why babies delivered via c-section are not exposed. Meanwhile, breastmilk contains human milk oligosaccharides (prebiotics) that provide food for the B infantis in the baby's gut and help it flourish, explaining why the gut microbiome of formula-fed babies are also less likely to contain B infantis , says Evolve Biosystems.

However, even breastfed babies delivered vaginally may still have low/zero levels ofB infantis today because their Moms may have undergone multiple courses of antibiotics in their lifetime such that they no longer have any B infantis to pass on, says CSO David Kyle PhD.
"The discovery of the link between B infantis and the oligosaccharides in human breast milk has been profound. That combination creates what we call the natural microbiome in babies, which is not what you find in the vast majority of babies born today."

Persistent colonization

In a recent clinical trial, Evolve showed that supplementation with activatedB. infantis , along with consumption of breast milk, led to a 79% increase in total bifidobacteria, persisting more than 30 days beyond supplementation; an 80% reduction in potentially harmful bacteria such as E. coli and clostridia; and a reduction in endotoxin, previously linked to type-1 diabetes, allergies and atopic dermatitis.

It also stimulated the production of short chain fatty acids which can reduce the risk of obesity; and lowered infant fecal pH to levels last seen over 100 years ago, added Dr Kyle, who is now developing a simple diagnostic test enabling health professionals to rapidly check babies' fecal pH levels.

Image © iStock.com/luismmolina, tiburonstudios, jfairone, Reptile8488

He added:"We also found that antibiotic resistance gene carriage in babies supplemented with vivo was down, so the antibiotic resistance genes were kind of disappearing, or a better way of looking at it is saying that our poor dysbiotic babies born today have a load of antibiotic resistance genes that is 10 times higher than it should be."

There is a six times higher incidence of allergies in children with lower levels of bifidobacteria, six times higher incidence of type 1 diabetes in children with lower levels of bifidobacteria, and a trend toward unhealthy body weight in children who had lower levels of bifidobacteria during infancy, according to Evolve Biosystems.

More than 5,000 babies are now consuming EvolveBio's Evivo activated B. infantis said Dr Kyle, who started selling the product on the Evivowebsite, Jet.com and Amazon.com a year ago and has recently persuaded a glittering array of investors from the Bill & Melinda Gates Foundation and Horizons Ventures to Johnson & Johnson Innovation to part with $40m (series C) to fuel Evolve's global ambitions. "Were targeting Moms through social media but were also targeting healthcare professionals such as neonatologists and pediatricians who want to see the clinical trials we've done so that they can really trust what we are saying.

We've also announced a partnership with Kings College London in February tostudy the effects of vivo, combined with breastfeeding, in restoring B.infantis in around 70 babies delivered by c-section."

The powdered live bacteria is shipped in refrigerated sachets (that can be stored frozen) that breastfeeding Moms can mix with breastmilk and give to babies via a dropper in the critical first weeks after a baby is born, when the immune system is developing, and good and bad bacteria are competing for space in the infant gut, he said. "If you have this daily for the first three months with breastmilk you are probably 80% of the way to success." A similar product suspended in MCT oil that can be delivered via nasal gastric tubes has also been launched for health professionals to administer in hospital settings for babies that can't go home immediately after birth.

Short and long-term effects
While Moms reviewing Evivo have cited multiple immediate benefits in their infants from reduced colic and eczema to better sleep and fewer and better formed stools, Evivo is not therapeutic, and these anecdotal claims are not supported by clinical data, stressed Dr Kyle. But what about the long-term effects. Can Evolve prove babies consuming Evivo with breastmilk are less likely to develop asthma, diabetes, or obesity?

Right now, this is clearly not possible, and Evolve is not making any long-term promises about disease risk reduction, he said: "We won't know what the outcomes are for 10-15 years."

However, retrospective studies such as Vatanen et al, Cell, 2016, which followed gut microbiome development from birth until age three in 222 infants in Northern Europe have made a connection between low levels of bifidobacteria in infants and early-onset autoimmune diseases, which were far more common in Finland and Estonia than in Russia, where kids had higher levels of bifidobacteria, he said.

*Evolves $40m Series fundinground was co-led by the Bill & Melinda Gates Foundation and Horizons Ventures, the venture division of the Li KaShing Foundation. They were joined by new investors Johnson & Johnson Innovation – JJDC, Inc., Arla Foods, and Continental Grain Company; and early investors Tate & Lyle Ventures, Alta Ventures, MLS Capital, Acre Ventures, and Bow Capital.

Evolve and the Gates Foundation will further expand their partnership to investigate how Evivo can help infants suffering from severe acute malnutrition through the restoration of the gut microbiome.

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FOOD SCIENCE & INDUSTRY NEWS

New technology can redesign enzyme structure

IFT Next Newsletter July 3, 2018

Enzymes are the catalysts of biochemical reactions, and each type of enzyme has a specific molecule with which it reacts.

But what if there was a way to change the structure of an enzyme so it can react with more molecules? A team of researchers has modified, or redesigned, the structure of one enzyme to give it more functionality across bakery and dairy applications.

The enzyme levansucrase naturally transforms table sugar to fructose oligosaccharides of different lengths (up to 1,600 Da) but does not efficiently synthesize levan, a large polymer more than 2,200,000 Da, says Jürgen Seibel from the Institut für Organische Chemie, Universität Würzburg. "For this purpose, we introduced a combination of genetic and chemical engineering, which had not been explored so far with this class of enzymes. After a round of mutagenesis to strategically position a tyrosine residue on the enzyme's surface, this amino acid was decorated in a two-step process with a flexible chemical tag. The resulting enzyme-tag-product interactions prompted the effective synthesis of high molecular weight levan, which can be applied in bakery, dairy, and other segments of food industry."

Levan and inulin are the two types of natural fructose-made polymers, each having a different linkage joining their fructose units, says Maria Elena Ortiz-Soto from the Institut für Organische Chemie, Universität Würzburg. Inulin and inulin-like oligosaccharides, which are mostly extracted from vegetable sources or synthesized by fungal enzymes, have broad use in the food industry, she adds. However, the use of levan polysaccharides is increasing, she says, with levan-based products in development for the food industry. "Although several bacterial enzymes are able to synthesize levan, protein engineering via our dual strategy provides another tool for achieving the synthesis of customized products for these fields. Specific modification of natural proteins is therefore an effective approach to provide the industry with sufficient amounts of engineered biocatalysts for the transformation of sugars."

What's exciting about the results of their research is that Seibel, Ortiz-Soto, and their study collaborators is that they can now try more extensive manipulation and further engineering of enzyme structures. This will allow them to explore different positions for chemical modification while maintaining high enzymatic activities, they say. "We recently obtained chemically modified levansucrase variants that produce preferentially tri-, tetra- and pentasaccharides, which are well known for their prebiotic function. We are currently working in the synthesis and characterization of small libraries of chemical modifiers intended to diversify the function of other carbohydrate processing enzymes and to gain insights into their reaction mechanisms."

Image © iStock.com/Silvia Bianchini

Is it possible to preserve phenolics during food processing?

IFT Weekly July 18, 2018

Processing raw materials, such as grains, can reduce the vitamins and phenolic compounds present in the final product.

In a set of recent studies, University of Illinois (U of I) scientists reveal what happens to cancer-fighting phenolic acids in corn when it is processed into cornflakes.

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In a Journal of Agricultural and Food Chemistry study, the research team made cornflakes from 19 corn genotypes varying in phenolic content. They wanted to know if higher ferulic acid and p-courmaric acid content in the corn kernel translated to higher concentrations of these phenolics in the final product.

"What we found was not particularly good news, but it was interesting. Regardless of the concentration in the grain at the beginning, the dry-milling process removes the majority of phenolics," said Carrie Butts-Wilmsmeyer, lead author of the two studies and research assistant professor in the Dept. of Crop Sciences at U of I.

The phenolic compounds in corn are primarily concentrated in the bran, or the outer covering of the corn kernel, which is removed in the first steps of the dry-milling process. The researchers wanted to determine if they could increase the remaining soluble phenolic content by heating the starchy leftovers during later processing stages. Although most of the phenolics in corn are bound to fibre, heat can release bound forms of the compounds and improve the antioxidant content of corn-based foods.

"We did see an increase in soluble phenolics, but it was so small, you could have gotten the same benefit from going to the refrigerator and eating a few blueberries," said Butts-Wilmsmeyer.

Although the phenolics didn't make it to the final product, they weren't lost entirely. "We have to focus on the bran and other 'waste' products," said Martin Bohn, co-author of the studies and associate professor in the Dept. of Crop Sciences at U of I. "Is it possible to extract these compounds and fortify the food with them? This is what I think is important. Our study showed that at the beginning, there's variability in corn hybrids for all these compounds but through processing, it's all levelled off, it's all gone. But they're still in the co-products, and I think we could actually recover them and add them to the end product."

In India, swapping crops could save water and improve nutrition

Replacing some rice with less thirsty crops could help to sustainably feed a rapidly growing population

Science Daily July 4, 2018

India will need to feed approximately 394 million more people by 2050, and that's going to be a significant challenge.

Nutrient deficiencies are already widespread in India today -- 30 percent or more are anemic -- and many regions are chronically water-stressed. Making matters worse, evidence suggests that monsoons are delivering less rainfall than they used to. But a study published today in Science Advances shares a brighter outlook: replacing some rice with less thirsty crops could dramatically reduce water demand in India, while also improving nutrition.

Starting in the 1960s, a boom in rice and wheat production helped reduce hunger throughout India. Unfortunately, this Green Revolution also took a toll on the environment, increasing demands on the water supply, greenhouse gas emissions, and pollution from fertilizer.

"If we continue to go the route of rice and wheat, with unsustainable resource use and increasing climate variability, it's unclear how long we could keep that practice up," says Kyle Davis, a fellow at Columbia University's Earth Institute and lead author on the new study. "That's why we're thinking of ways to better align food security and environmental goals."

The study addresses two key objectives of the Indian government: to reduce undernourishment and improve nutrition, and to promote sustainable water use.

A Grain of Truth

Davis and his colleagues studied six major grains currently grown in India: rice, wheat, maize, sorghum, and pearl and finger millet. For each crop, they compared yield, water use, and nutritional values such as calories, protein, iron, and zinc.

They found that rice is the least water-efficient cereal when it comes to producing nutrients, and that wheat has been the main driver in increasing irrigation stresses.

The potential benefits of replacing rice with alternative crops varied widely between different regions, depending on how much the crops could rely on rainfall instead of irrigation. But overall, the researchers found that replacing rice with maize, finger millet, pearl millet, or sorghum could reduce irrigation water demand by 33 percent, while improving production of iron by 27 percent and zinc by 13 percent.

In some instances, those improvements came with a slight reduction in the number of calories produced, because rice has been bred to have higher yields per unit of land.

So in some regions there's a tradeoff between water and land use efficiency, but Davis thinks that with more attention from scientists, the alternative crops could develop higher yields as well. For now, rice replacement isn't a one-size-fits-all solution, but something that should be evaluated on a case-by-case basis for each district, he said.

Going Against the Grain

While the findings are promising, the authors stop short of making policy recommendations -- yet. First, says Davis, they'd like to add other variables into the analysis, including greenhouse gas emissions, climate sensitivity, and how much labour and money it takes to grow each crop.

In addition, the team wants to study Indian food preferences, to see if people would be willing to incorporate more of these alternative cereals into their diets. Davis is hopeful; "There are places around India where these crops continue to be consumed in pretty large amounts," he says, "and there were even more a generation or two ago, so it's still within the cultural memory."

India's state-run Public Distribution System (PDS) could be an ally in influencing consumer preferences. PDS currently subsidizes rice and wheat to support smallholder farmers and low-income households. Those subsidies have given incentives to farmers and consumers to plant and buy those crops, but future policies could help to encourage the use of the more nutritious, water-saving cereals like millet and sorghum.
Momentum is growing in support of alternative grains. Some Indian states are have already started pilot programs to grow more of these crops, and the Indian government is calling 2018 the 'Year of Millets.'

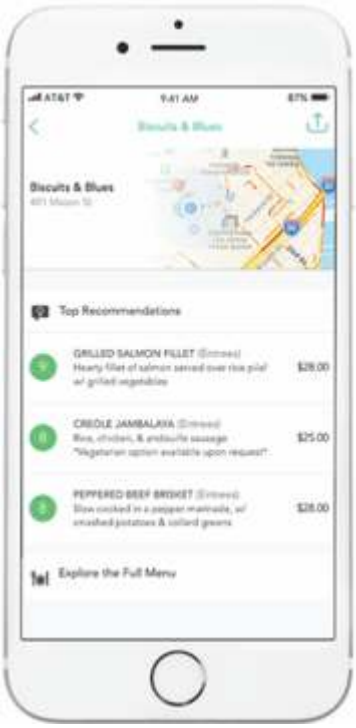
"If the government is able to get people more interested in eating millets, the production will organically respond to that," says Davis. "If you have more demand, then people will pay a better price for it, and farmers will be more willing to plant it."

Kyle Davis is also a NatureNet Science Fellow with the Nature Conservancy. Other authors on the study include: Davide Danilo Chiarelli and Maria Cristina Rulli from Politecnico di Milano in Italy; Ashwini Chhatre from the Indian School of Business; Brian Richter from Sustainable Waters; Deepti Singh from Columbia University and Washington State University; and Ruth DeFries from Columbia University.

Translating science into suggestion: Start-up on personalized nutrition app

26 Jul 2018 Nutrition Insight

"Health needs to be valued and understood as a journey with many different processes: Personalized nutrition needs to take that into account and put in the human side to scientific test results," says Shai Rozen, CMO at Suggestic, a start-up that provides dietary recommendations based on user biology and AI.



Tapping into the current surge of interest in personalized nutrition, Suggestic offers an app which can provide real-time, contextually-aware, hyper-personalized food recommendations – such as restaurant menu suggestions or recipe ideas. These recommendations are tailored to individual users according to an expanding array of user biology, coupled with artificial intelligence. A key aspect of Suggestic is that users can select their preferred diet/nutrition plan, after which it provides hyper-personalized advice, transforming the ever-expanding array of scientific knowledge on nutrition into actionable consumer suggestions.

"Consumers are very moved by trends and in the past few months we have seen the trends of keto, high-fat, low carb, as well as growing trends in gut health and the microbiome," Rozen says.
With levels of primarily food-driven chronic conditions, such as diabetes and obesity, skyrocketing unabated for four decades since the first national dietary guidelines, consumers are losing trust in dietitians and official government-sanctioned nutritional advice, Rozen says. Instead, they are turning to alternative sources of nutritional guidance.

"Food can be medicine, but it's clearly been the opposite in our world. To enable food to become medicine again we use technology to provide the right tools, at the right time, for the right people: personalized nutrition," Rozen explains.

"Although there are so many scientific tests such as microbiome or blood tests, many of them are still not actionable. You do get a great report, but the problem is that the more data and information you present, the more confusing

it becomes for consumers," he says. "Our job is to take all that information and translate that in an actionable way. A report may say 'eat more olive oil,' but it's still not enough. The consumer needs to know why, how, when? Our role is to take the science and bring it closer to the end user."

"We see the industry in three layers: the first being data-driven, the middle being the people making sense of it and analysis, and at the top, the actionable insider. That is where we stand," Rozen says. "We have about 15 diet programs now, and we hope to reach 25 by the end of the year."
One of Suggestic's next steps will be toward the growing trend surrounding digestive health.

"The trend around microbiome is becoming more real. Whereas before companies were perhaps only offering testing, we are seeing more companies actually offering advice or products – such as pro and prebiotics – that are more personalized," Rozen says. "Health needs to be valued and understood as a journey with many different processes: Personalized nutrition needs to take that into account and put in the human side to scientific test results," he says. "It's about how companies present their products and how they think about the users. Not just about selling but thinking about their journey and helping them meet their goals."

Despite some personalized nutrition endeavours coming across as "goal-less," Rozen still things the industry is advancing at a fast pace.
"Coming from the consumer side, I see that the consumer problems need to be solved. Working with many scientists, I also see their way of thinking. What I've learnt is that something doesn't need to be perfect for someone to achieve their goals."

"For example, the microbiome. It's very new, and we do not know much, but there are certain things that we do know. Let's do something with it now and start making products that help people instead of waiting 20 years."
"I see the industry moving and evolving very fast," he notes. "Big companies are engaging actively in the nutrition and health space, for example, by setting up departments for personalized nutrition and innovation."
Despite personalized nutrition's huge potential for growth, challenges still remain, especially for a startup such as Suggestic. "The largest hurdle for personalized nutrition [as a whole] is underpinning it with science. Nutrition is terribly weak as a science (certainly in relation to the other sciences), mainly relying on observational studies," he notes.

Suggestic: Key Facts & Figures (2018)

- First launched in 2016. (Version 2.0 launched in April 2018)
- Currently boasts 25k+ users.
- Growing at 7-8 percent per week.
- 76 percent of users are women.
- 68 percent of users are in the US. (12 percent are in Canada)
- Currently has 23 active programs. (8 of which are "Premium" (paid))
- Program usage, in order:
  - Mediterranean and low carb Mediterranean.
  - Low carb, high fat and variations of the Keto diet.
  - Paleo and no-grain programs.
  - Special diets such as Low FODMAP and anti-inflammatory.
  - Vegetarian variations and vegan.

Moreover, finding the right focus or angle can be a challenge. "By nature, food is very imprecise. Food is food – it will never be the same as in a lab if you cook at home, for example. Each piece of broccoli is different; the nutrient profile could be very different. There are so many potential avenues to explore," he says. However, the potential for smartphones to vastly reduce the cost of such studies is now becoming a real possibility," Rozen concludes.
By Lucy Gunn

"Bread reinvented": UK start-up Lo-Dough on its low carb bread alternative

26 Jul 2018 Nutrition Insight

Breads and pastries are a fixed staple in many cultures and cuisines. Although these items are often well loved, they can also be high in both carbohydrates and calories. Responding to growing consumer demand for convenient yet healthy bread options, Manchester food tech start-up Lo-Dough has created a high/fibre, gluten-free, reduced carb, low-calorie bread alternative.

In keeping with consumers interest in clean label, Lo-Dough is touted as having no artificial preservatives, artificial colours or hydrogenated oils commonly found in mass-produced breads, pastries and pizza bases. Using six ingredients – gluten-free wheat fibre, dried egg white, konjac flour, psyllium husk powder, naturally derived cellulose

fibre and salt – Lo-Dough is gluten, soy and nut-free, as well as being sugar-free and fat-free. Containing 9 grams of fibre, it provides almost one-third of our recommended daily intake per piece.

According to inventor Ben Holden, Lo-Dough tastes like bread, can be baked as pastry and can be used as the ultimate healthy pizza base. At 39 calories, one 9-inch circular piece contains 80 percent fewer calories than two slices of regular bread and only 2.2 grams of carbohydrate.

Launched last year, Lo-Dough has now become the first ever company to be awarded an official "reduced carb" certification by Sugarwise, a UK-based certification organization for sugar claims on food and drinks.

The company was handed the official certification after tests showed that their product was outstandingly low in carbohydrates compared to any possible competitors. The announcement by Sugarwise means that Lo-Dough is not only recognized officially as a "reduced carb" innovation but is paving the way for a breakthrough in the dietary, fitness and slimming markets.

All products that carry the Sugarwise marque must be low in sugars, meaning they must have no more than 10 percent of their calories coming from free sugars, or be no more than 5g of free sugars per 100g. Lo-Dough meets both of the criteria.

Set up in 2017, Lo-Dough started as a tabletop experiment by Holden. After teaming up with business partner Rob Wales, the company has grown and currently employs over 30 staff, has 55,000+ customers, shipping its products across the globe. But Holden tells NutritionInsight the company has plans to expand its reach further. "Lo-Dough is very viable for large-scale production and we're actively designing and planning a scaled-up productio n facility to serve a significant ly larger customer base," Holden says. "Our target is to have the full scale dedicated production facility in operation in the next 18 months. Due to the ambient stability and 6-month shelf life of Lo-Dough, we plan on being able to supply the EU, US and AUS markets from this facility."

"We are currently investing heavily in R&D and have a new, 'top secret' product gearing up for release later this year. In addition to our recent Sugarwise certification, we are looking to achieve certifications from the Coeliacs Association and Vegetarian Society as well as applying for a Queen's Award in Enterprise Innovation," he says.

Consumer interest in aspects such as gluten content fit squarely with the growing trend of consumers looking for a lifestyle pattern and diet that "work for them." According to Innova Market Insights, consumer study results illustrate the extent of the trend. In fact, four in ten US and UK consumers claim to have increased their consumption of "healthy foods" (2017).

Product launch activity has followed suit, with better-for-you related claims (health claims, clean label claims and free from claims) having increased their market penetration from 42 percent in 2012, to 49 percent in 2017, pointing to growing opportunities for new product development.

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Cinnamon oil may hold the key to preventing superbugs

17 Jul 2018 Nutrition Insight

Antibiotic resistance has become one of the biggest threats to global health and food security.

In light of antibiotics becoming less effective against superbugs, a Swinburne University researcher is studying traditional agents to modify the behaviour of bacteria, rather than killing them.

Dr. Sanjida Halim Topa investigated cinnamaldehyde, the compound that gives cinnamon its flavour, and found that it inhibited the development of biofilm, a sticky film of bacteria – like the plaque that forms on teeth – that can cause persistent infections, which resist even the most potent antibiotics. There is an urgent need to develop alternatives to antibiotics to treat chronic biofilm-mediated infections, such as may occur with urinary catheters and artificial joints.

"Though many previous studies have reported antimicrobial activity of cinnamon essential oil, it is not widely used in the pharmaceutical industry," Dr. Topa says. "We aimed to search for the molecular activity of this oil, focusing on its major component, cinnamaldehyde."

The researcher hypothesized that using natural antimicrobials, such as essential oils, might disrupt bacterial communication, thereby preventing biofilm formation. "Thus, we focused on the impact of different concentrations of cinnamaldehyde in different biofilm

Dr. Topa tested the effect of different concentrations of cinnamaldehyde on biofilms formed from the pathogenic Pseudomonas aeruginosa strain of bacteria. She found that a sub-lethal concentration of cinnamaldehyde controlled the dispersion of Pseudomonas aeruginosa and the development of biofilm.
"Humans have a long history of using natural products to treat infections, and there is a renewed focus on such antimicrobial compounds. Natural products may offer a promising solution to this problem," Dr. Topa says.

Speaking to NutritionInsight about new R&D possibilities for the supplements industry following this research, Dr. Topa says: "There is definitely always scope for new research with existing products we have in the market. I believe it depends on the way we want to use it."

"There are a number of different natural alternatives that might be helpful to antibiotics. But it is crucial to investigate their interactions with the host," she says. This research was undertaken with colleagues at Nanyang Technological University in Singapore.
Dr. Topa is now investigating embedding cinnamaldehyde in nano-fibres in wound dressings. "Following the recent findings, our next focus will be definitely on cellular mechanism and clinical application," she says.

"Ingredient for the future of food": New chickpea protein launched in North America

10 Jul 2018 Nutrition Insight

Ingredient technology company Nutriati and exclusive commercialization partner PLT Health Solutions have introduced a new chickpea protein solution to North American food, beverage and supplements markets, touted as being able to take the "pain out of formulating with plant protein." Called Artesa Chickpea Protein, the ingredient is reportedly the first chickpea-based protein concentrate available in commercial quantities.

The Artesa Chickpea Protein concentrate has a minimum protein content of 60 percent, and a fibre content of 14 percent – which the companies report is quite high compared to existing dairy and plant proteins that usually top out at around 2 percent fibre.

Nutriati reports it re-engineered the manufacturing process for Artesa to address some of the main "pain points" related to formulating with plant proteins – starting with ingredient taste and overall in-product sensory experience. Consumer testing has shown that Artesa can approach the sensory and formulating experience of dairy proteins in the areas of taste, texture, product structure and mouthfeel. The small, uniform particle size of Artesa Chickpea Protein is responsible for formulating benefits that include enhanced dissolution and suspendability, excellent foaming and emulsifying properties and faster, easier processing with less waste than occurs with other leading plant proteins.

In beverages, this small particle size enhances dissolution and suspension of the ingredient in liquids and reduces sedimentation that is a common issue for plant proteins – particularly in higher pH beverages where 'crash out' can occur. In low moisture applications like bakery, the small particle size reduces viscosity of formulations which can help prevent production bottlenecks and reduce non-spec products and waste.

Artesa Chickpea Protein also reportedly has high water binding capacity and foaming and emulsification properties that other plant proteins don't – which can be critical to processing efficiency, shelf-life and final product quality.

According to Richard Kelly, CEO and Co-Founder of Nutriati, the company's selection of the chickpea as the source for its plant protein offering is based on a range of factors – from taste and processability to its high sustainability. "The chickpea gets excellent marks when it comes to sustainability. Chickpeas require significantly lower use of chemical fertilizers, water and pesticides in production. They also have the lowest carbon footprint of any protein starting materials and contribute to healthier soils," he says.

"Hummus introduced mainstream America to the chickpea as a food two decades ago, and consumers haven't looked back. Forty percent of all chickpea-based food product introductions over the last 15 years occurred in 2016 and 2017 and 2016 saw a 150 percent increase in chickpea-based snack introductions. We think chickpeas are a great ingredient for the future of food," he says.


Image © iStock.com/natashamam

Nutriati's production process is protected by intellectual property, and according to the companies, it differs significantly from traditional plant protein processes that rely on high amounts of water, acids and precipitation.
According to Nutriati Co-Founder and Chief Innovation Officer Michael Spinelli, Artesa Chickpea Protein was developed to solve production issues that have accompanied attempts to increase the amount of plant protein in foods and beverages. "Among food and beverage producers, stories of struggles with plant protein are pretty common. Taste issues are often solved via the use of masking agents or added sweeteners. Sometimes processing aids or even facility retrofits are required to handle high protein and gluten-free products," he says.

"We have found that recipes featuring Artesa Chickpea Protein can meet or even surpass gold standard formulations for taste, texture and other sensory aspects in a range of product applications. We have also found that people can up the boundaries of protein delivered per serving over anything that has been possible with plant-based ingredients with Artesa and still meet consumer expectations for organoleptics," he adds.

'A largely unexplored opportunity': The science linking texture and calorie reduction

By Katy Askew 20-Jun-2018 - Food Navigator

The texture of food can influence people's calorie intake, Dr Ciaran Forde of the National University of Singapore and Singapore Institute for Clinical Sciences believes.

Dr Forde is the senior principal investigator for sensory nutritional science and part of a team of researchers at the Singapore Institute for Clinical Sciences looking at the relationship between the texture of food and how it is perceived. He suggested that there is a "largely unexplored opportunity" to use texture to "moderate calorie choice and intake ".

FoodNavigator spoke to Dr Forde about some of the latest developments in textural science.

FoodNavigator: What impact does texture have on how people perceive food?
Dr Forde: Texture plays a critical role in how people perceive a food – in terms of its freshness, flavour release and perception during consumption, but also through dietary learning, where food texture provides guidance on foods' filling properties and informs our expectations of how satiating certain foods are likely to be.

Calorie for calorie, foods that are perceived as thicker, creamier and require more chewing before being swallowed, are perceived as more filling and this has been shown to influence calorie/portion selection. For these reasons, a food's texture is central to both product appreciation but also in how we use sensory cues to anticipate the potential satiating effect of different foods.

FN: Does texture alter how food tastes?
Dr Forde: Yes. Taste is a proximal sense that requires tastant compounds in a food to be released to interact with the taste buds before they can be perceived. In this regard, a foods structure will influence food breakdown and tastant release from a food during consumption.

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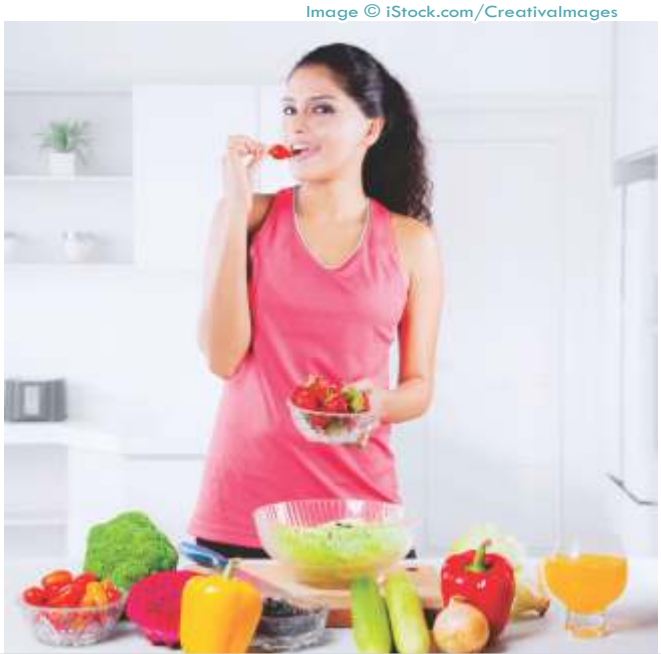

Foods with greater structure require more mastication (chewing) to prepare a bolus for swallow, and may afford more of an opportunity for tastant release during chewing, whereby the food dynamically deforms during mastication and saliva lubricates and hydrates the food releasing taste compounds to be perceived on the tongue.

Food texture can:
- **influence oral processing during consumption and nudge people to slow their eating rate to reduce energy intakes by 10-15% within a meal, by simply changing food texture within a hedonically equivalent range;**
- **enhance the post-meal satiety experienced following a meal, slowing gastric emptying and reducing the risk of additional calorie intake by enhancing fullness per kcal consumed;**
- **moderate the sensory perception of a product and facilitate reductions in public health sensitive nutrients like sugar and salt;**
- **moderate digestive processes and post-absorptive metabolism to influence nutrient bioavailability, enabling targeted delivery of nutrients.**

Food texture and the associated chewing has also been shown to moderate blood glucose excursions post-ingestively- Dr Forde

By contrast, certain foods require less oral processing and if they are high in sugar or salt, the majority of these tastants are swallowed rather than perceived, creating a risk for overconsumption. In recent years there have been efforts to optimise food structures to support optimal tastant release during consumption, while simultaneously reducing the total amount of salt or sugar being consumed.

FN: How does it change whether people feel satiated sooner?
Dr Forde: Texture can influence feelings of fullness by changing the oral processing required during meal consumption and altering the psychological and physiological cues perceived. [It can also] change the rate at which foods transit the stomach and contribute to post-meal satiety. In terms of the first way, foods with more texture (i.e. chewier, thicker, firmer) require longer time in mouth to prepare the bolus for swallow and through this spend longer in contact with the senses signalling the arrival of calories. Extending the oro-sensory exposure time of a food by slowing the eating rate and increasing the number of chews per bite has been shown to reduce the energy consumed to fullness within a meal (satiation) and to produce a stronger satiety response post-ingestively, both in terms of feeling fuller for longer and as reflected in the endocrine response to foods consumed.

In our studies, when we have changed the texture of a food to effect a reduction in eating rate of about 20% (for example, reducing eating rate from 50g/min to 40g/min), we consistently observe reductions in ad-libitum (free eating) to fullness of 10-15% in kcals. Importantly, in our studies the foods with the enhanced texture were equally liked, and despite the reduction in energy intake for the enhanced texture meals, there were no significantly differences in feelings of fullness at the end of the meal, and no additional intake of food to compensate for the reduction at the next meal.

FN: Does texture alter digestion?
Dr Forde: Food form (solid, semi-sold or liquid) can influence digestion and post-prandial feelings of fullness and satiety. Food form has been shown to influence satiety, product sensory perception, emptying rates (the rate of transit through the stomach), intestinal transit time and nutrient absorption and post-absorptive metabolism including nutrient bioavailability in the GI tract gastric.

As a rule, it is well established that solid foods confer greater satiety and slower gastric emptying, when compared to liquids and semi-solids. This is one of the reasons why high energy liquid foods such as sugar sweetened beverages, can pose such a risk for energy over-consumption, as they deliver a lot of energy but confer little to nutrient intakes or satiety, and so are easy to over-consume.

Compare and deliver: Aussie price comparison app growing as it prepares to add Aldi to platform

By Lester Wan 18-Jul-2018 Food Navigator Asia

A grocery comparison and delivery app in Australia that compares prices between Coles and Woolworths to give consumers the best prices has been growing rapidly with a web app recently launched and Aldi to be added to the mi within the next week or so.

"We have already started integrating Aldi products onto te platform. This will be the first time in history that Aldi has been compared head to head to the other big to vendors Mussa Khan, co-founder of GroceryGetter, told FoodNavigatorAsia.

GroceryGetter was launched in February and already there are close to 10,000 users over the phone and web apps, with a few thousand coming on board in each of the past two months. A new version of the phone app is about to be released very soon. "We are expanding fast. In the last 30 days alone our user base as grown 30% and we are the leading comparison app in Australia for groceries" said Khan. Shortly after the launch, GroceryGetter began offering grocery delivery services through its phone app. Khan said that while the web app doesn't have the delivery option as yet, "it is coming in the next few day".

According to him, GroceryGetter is the only app in Australia both compares prices and delivers. GroceryGetter was founded by Khan and Shawnjit Singh. In 2015, Singh noticed there were a lot of aggregation services available in the Australian marketplace such as for finding the best credit card deal, best interest rates, cheapest electricity provider, cheapest PC parts across vendors, and so on, and wondered what hadn't yet been done that is commonly needed.
"No one as comparing grocery prices, which is crazy sine every single consumer buys it every week and it's over a $100b market in Australia" said Khan.

What GroceryGetter can do
Khan said GroceryGetter has the top 100 deals for the week that displays the highest discounts between Coles and Woolworths. He explained that it doesn't distinguish if the comparison of the products is based on a special over or not, but simply finds the biggest savings available.
For instance, a top hit on the deals for the week, which is not on special offer at either of the vendors, is cayenne chillies, which was found to cost AU$3 at Woolworths and AU$1.10 at Coles. The app had found a 3 discount. Another example is Vittoria coffee which is sold at Coles for AU$36.70 and AU$18.25 at Woolworths. In one item of purchase alone, the app-using shopper would have saved more than AU18.

GroceryGetter is expected to be even more useful in identifying cost-savings once Aldi's products are fully integrated into the system as well.
The top two products searched on GroceryGetter are milk and bread. Others in the top 10 include Weet-bi, chicken, Coca-Cola, Chobani yoghurt, cheese and rice. The top five products ordered on the app are Woolies Ricotta Cheese, Huggies wipes fragrance free (80-pack), Original Vita - Wheat, Kellogg's Coco Pops and Diet Coke (24-pack).

Expansion plans
While there is a delivery charge of AU$9.99, Khan said it was still cheaper than relying on a single retailer. GroceryGetter currently delivers to "all areas of Sydney and is looking to expand to Canberra soon and Melbourne net. Brisbane is expected as well, sometime next year. While GroceryGetter won't be looking at international expansion until they "conquer Australia, Khan said they did aim to expand overseas eventually. "We have a keen eye for New Zealand, Malaysia and Singapore", said Khan. "I don't think we will look internationally for at least another 24 months until we have a lot of capital behind us and a very tried tested and refined product to drop into other markets."
In the next phase, the team will be launching GroceryGetter for business.

Five key features that will shape the online retail store of the future

By Lester Wan 02-Jul-2018 Food Navigator Asia

Online grocery sales in China will grow 286% by 2022 - accounting for 11.1% of the country's total market - as the retail market continues to undergo unprecedented change.

That's according to a recently-launched report from grocery research organisation IGD, published in association with The Consumer Goods Forum. It reveals what online stores of the future will look like and highlights key investment opportunities in digital commerce.
Other aspects of note include online and offline retail merging — with an online store vital to complement physical stores.
Furthermore, based on a survey of 223 senior industry members across 42 different markets and a series of in-depth interviews, IGD predicts dramatic changes in the competitive retail landscape.

Among the industry respondents, 78% think shoppers will use online price comparison services more regularly to switch to the cheapest retailer, while 67% believe shoppers will be able to choose from a wide range of specialist online retailers underpinned by a common and consistent delivery service. Additionally, 75% expect more manufacturers to sell directly to consumers online.

Combining industry input with the insight from IGD's global team, the research further sheds light on the online store of the future and five key features.

1. Personal micro store
The online store of the future will be a shopper's personal micro store offering individualised and online-exclusive products, personalised promotions, recommendations, advertising and loyalty schemes.
Of the respondents, 77% think almost all digital communication to consumers by retailers will be personal.

In high-value categories, products will be customisable such that one can create his or her own shampoo or cereal.
"AI will help to unlock personalisation," said Simon Mayhew, Online Retail Insight Manager at IGD. "If you need a meal for tonight, your homepage will display only the relevant solutions. When generally browsing, you will only see the products and pack sizes likely to meet your needs. Gamified loyalty schemes to reward you and keep you coming back can also be expected.

2. Your personal assistant
The store will also act as a smart personal assistant, connecting with various devices, preventing shoppers from running out of products and supporting their lifestyle goals.

Nearly two-thirds (60%) of those surveyed predicted that smart devices automatically re-ordering products will become a firmly established way of shopping.

Also, 71% of respondents expect some retailers to provide a service to over personalised dietary guidance. "Shoppers will subscribe to have their favourite products delivered regularly and AI will predict when you may run out, and make or suggest a reorder," added Mayhew.

3. The efficient store
For shoppers, the online store will also be more efficient, being easier and quicker to order products. Login and payment will be available through facial, voice or touch recognition technology.

Shoppers will even incur less waste, with a greater choice of pack sizes and meal planners to help manage quantities and advice on using leftovers. A better fulfilment service will be on offer with more deliveries, on time and in full, and with products delivered with the right quality and freshness.

"Data from the online store will guide product development. Retailers will see gaps in their ranges through unfulfilled search requests and have a better understanding of product quality through ratings, reviews and feedback to chatbots," said Mayhew.

"Fulfilment will benefit from robotics and supply chain forecasting will be more accurate. This will mean online pickers have fresher products to select, helping overcome one of the biggest barriers to shopping online."

Unattended deliveries to homes, cars, and even 'straight to the fridge', will be expected to grow in popularity. Amazon Key already offers such services.

4. The frictionless store
The store of the future will give shoppers a frictionless combined offline and online shopping experience. People will switch seamlessly from shopping online and in-store with data cross-referenced between the two.

This will help bring more personalisation to the physical store and help shoppers find their favourite products quickly and discover new ones. This is an opportunity that many companies need to work on, with 53 of survey respondents having said they haven't or have only just started to integrate their online and offline teams.

"Before visiting a physical store, you will be able to look online to check in-store, real-time availability, access product information, get product usage ideas and read reviews," said Mayhew. "When you arrive at the physical store you will then benefit from personalised offers and recommendations. An online app will help you find products and pay for your shopping without cash."

One example today in China is AlibabaHema Supermarket, in which shoppers download the Hema app to access product information, recommendations and make in-store payments. It is also a fulfilment centre, capable of delivering products to shoppers within a 3km radius in 30 minutes, 24 hours a day.

5. The invisible store
At times, the store of the future will be invisible, without even the need to visit an online store. Shoppers can buy products from shoppable digital content such as videos, photos and social media. China has been leading the merging of media, entertainment and shopping, and Europe and North America will follow.
WeChat has close to one billion users and allows them to sell goods and services to their contacts, advertising them through the app's newsfeed, called Moments. It also has integrated mini-programs or apps that can be used to sell products.

Said Joanne Denney-Finch, chief executive of IGD, "Grocery retail is seeing an unprecedented amount of change, driven by changing shopper expectations and the ability to meet these using transformative technologies."

"This offers great opportunities for companies of all sizes. The winners will put the needs of their shoppers first, be prepared to act decisively, maintain the highest everyday standards and exhibit tremendous agility."

Rich tastes: Why only the wealthy can afford India's high-priced organics

By RJ Whitehead 23-Jul-2018 - Food Navigator Asia

India's government must promote bio-fertilisers and pesticides to reduce the cost of organic cultivation, as part of a dedicated policy to increase production.

That's according to a study by apex industry body, Assocham, which has linked the high cost of organic food production to a market that is limited largely to an affluent class of consumers.

Switching to organic food would likely cost a family a premium of Rs 1,200-1,500 (US$17.60-22.00) per month, Assocham revealed in a recent study it authored with management consultant EY.

Production scale should not be a problem, however. India is home to the highest number of organic producers globally with 835,000 farmers. It also ranks ninth in terms of area under organic cultivation with 1.49m ha.

"Therefore, it occupies a robust position in producing organic products, having already exported 1.35m tonnes of certified organic food products worth Rs1,937 crore [US$275m] in 2015-16 ," the report stated.

The domestic organic market is estimated at Rs 40,000m and is likely to increase to Rs 100,000m–120,000m by 2020, with a similar incremental trend in exports — though this is based on a very low uptake.

Despite the promising performance of exports, local organic consumption of organic produce is still at a nascent stage, with a market share of less than 1% and per capita consumption equivalent to only US$0.12.

Market challenges

The industry has to bear costs for specialised farmer training, as well as dedicated processing, packaging and storage for products without chemical additives.

Moreover, high certification costs, together with expensive organic manures and inflationary pressure created by high demand and low supply, are among numerous reasons why organic prices are so high, the study explained.

In terms of the market, poor awareness levels among consumers of the health benefits of organic foods, especially in non-metro cities, together with their limited availability "are posing a grave challenge to the growth of the Indian organic food industry," it said.

To offset these issues, Assocham has called for the development of a central public-private partnership model that will help the organic sector in reaching its full potential.

"A greater emphasis should be placed on the capacity-building of stakeholders, easing access to nuance, monitoring and evaluation of all assets and processes, as well as research and development to help keep abreast with global progress in the sector ," said Assocham secretary general, DS Rawat.

Role of government bodies

While the government has sanctioned several schemes to incentivise organic farming, with a number of state governments even creating individual policies to promote these, there still exist challenges for all stakeholders involved in the value chain.

For example, state-level policies are needed to monitor organic production to coincide with policies that promote cultivation.

At the same time, the government needs to step up its efforts to provide incentives for bio-fertilisers and pesticides, and promote their use to decrease the cost of cultivation.

"The increasing costs of inputs and the elongated conversion period from conventional to organic farming are a few of the key challenges faced by the producers, most of whom are small or marginal farmers," the report said.

Pea protein trio of isolate-starch-fibre best to mimic meaty texture

By NiamhMichail 20-Jun-2018 Food Navigator

Manufacturers are moving from soy to pea protein to accurately mimic the texture of meat and dairy in plant-based alternatives, according to pea supplier. "It's part of their new product development (NPD) priority," says its managing director.

"There is a real trend towards pea protein ingredients because they are non-allergenic," according to Eric Bosly, global commercial director at Belgian, family-owned pea supplier.

"Many customers want to replace soy with pea thanks to its positive, clean label image, and meat analogues are a new area where we can really mimic meat fibres."

Frank Truong, who recently joined the company as general manager of

Image © iStock.com/ lleerogers

newly opened North American subsidiary in Chicago that will cover the US, Canadian and Mexican markets, confirmed that they see "good growth" in plant-based meat and dairy alternatives.

"In Europe and the US, we are very active in [this category]. Brands are leading the way in the use of plant based proteins. You have Impossible Foods, Beyond Meat, Pinnacle Foods and its Gardein brand and Kellogg's with Morningstar Farms, Danone and Whitewave.
"We are in conversation with some of those companies. They have primarily used soy in the past but now are looking to pea protein. It's part of their NPD priority," he told FoodNavigator.

Texture trio

According to Bosly, for the best, meat-like texture, manufacturers should combine several functional ingredients. Protein isolate has both texturising and emulsifying properties and creates a "fibrous" analogue with a neutral taste. If combined with a dust-free, dispersible pea fibre powder, however, the product will have more 'bite'.

"Thanks to its good water and fat retention, it gives a good bite to meat-free burger. In fact, this concept was developed previously for meat but now plant-based proteins are using it too," he said.

Meanwhile, functional starches can help plant-based ingredients withstand the sometimes harsh manufacturing processes needed to recreate the texture of meat.

Native pea starch is able to resist shearing, crumbling, heat treatment and acidic conditions and, thanks to a high amylose content, can be used in extruded products.

The supplier has also been working to increase solubility. In some beverage applications, particularly non-dairy protein drinks, pea protein can leave a sandy texture if it has not been formulated to have a high solubility, said Bosly.
While pea protein provides good texture, taste is an area it still needs to improve on, Bosly admitted. The ingredient has for years battled with a bitter aftertaste.

"We have developed a special process that, by physical methods so without the use of chemical additives, reduces the aftertaste," said Bosly. "This was one of the drawbacks of pea in the past. People today are very happy with the mild flavour but this is still the main development part and you can expect further improvements."

Clean label

Aside from the functional advantages, one reason to opt for pea protein in a formulation is its environmental impact, Truong said. It takes 3,200 litres of water to make one kilo pea protein compared to around 5,900 litres for soy or around 588,000 litres for beef, and the production process is gentler.

"Soy also uses hexane to extract fat from soybeans but in pea it's a very natural process. We just use physical means to separate the two, there is no use of organic solvents," he said.
"People care about how products are manufactured and our customers do ask what kind of solvents we use."

According to Bosly, consumers are increasingly interested in assessing their environmental footprint by looking at what they eat. "The fact we are very energy efficient – with this new investment, the fact that all the logistics of our raw materials is done by barge – means we can address those concerns."

Double capacity

In 2013, the Belgian company committed €35 million into a second pea protein processing line and second drying tower, which was officially opened earlier this month and will double its capacity.

"Based on our experiences and tight links with our pea suppliers – in Europe we have access to good quality yellow pea – it was obvious for us to invest in Europe in order to provide substantial volumes to the market," Bosly said.

REGULATORY NEWS

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FDA adds rice bran fibre to list of approved dietary fibres'

IFT Weekly July 4, 2018

The myths surrounding high protein intake are hard to dispel, according to one of the field's foremost experts.

RiceBran Technologies (RBT), a leader in the production and marketing of value-added products derived from rice bran, has received notification that the U.S. Food and Drug Administration (FDA) has granted the company's petition to consider rice bran fibre as a dietary fibre. The FDA's decision was included in last month's guidance for industry that identified eight additional non-digestible carbohydrates (NDCs) that the agency intends to add to the list of non-digestible carbohydrates that meet the definition of "dietary fibre" that was established in the Nutrition Facts label final rule.

Ingredients containing two or more of the following cell wall fibres: cellulose, lignin, pectin, arabinoxylan, and beta-glucan, in varying proportions fall within FDA's broad category of "mixed plant cell wall fibres" that the agency intends to include as dietary fibres. Rice bran fibre contains a mix of cellulose, arabinoxylan, lignin, and pectin.

Base labelling policy on science and consumer motivation, says EUFIC in labelling report

20 Jul 2018 Nutrition Insight

Appropriate and meaningful nutritional information should be based on science and take into account consumer use, interpretation and understanding of different labelling schemes, The European Food Information Council (EUFIC) 2018 edition of the Global Update on Nutrition Labelling notes. The extensive report, produced by EUFIC in collaboration with Landmark Europe and with input from nutrition foundations across the world, assesses the global state of nutrition labelling, highlighting regional differences and policy measures.

In some countries, government regulations for nutrition labelling have been in place for years while others have only recently developed a framework for the provision of nutrition information. In both circumstances, the provision of nutrition information on the front-of-pack (FOP) is becoming an increasingly prominent policy issue.


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The global diversity is clear. In Europe, colour-coded schemes may come under consideration in Portugal, Poland and Ireland, while Germany plans to develop an understandable and comparable FOP label, but has not elaborated on the format. The Netherlands had used the Choices logo for years but decided to move away from using health symbols on pack and provide nutrition information via a smartphone app. While in Asia, a number of countries are also using health logos. Singapore, Thailand, and Malaysia have opted for the Healthier Choice Symbol, while the Philippines has introduced its own "Wise Eat" logo and Vietnam has chosen a logo based on the Choices system.

Key-takeaways for a complex space: science and the consumer

The report highlights the necessity for policy decisions to be based on science: the critical question is how appropriate and meaningful nutrition information can be provided on the food label so that motivated consumers can act on their desire to improve their diets. There is great interest among stakeholders and the research community in the potential of nutrition labelling to guide consumers in their product choices so as to enable them to adopt more balanced eating habits. In this respect, it is clear that what matters is the overall diet, not the consumption of an individual product.

On this note, the report further highlights the importance of engaging with research on what is effective in influencing consumer choices. Some studies show that judgment of nutritional quality labels, GDA-based labels, and health logos have a sizeable impact on consumers' preference and intention to purchase a product. This data is backed by consumer studies in Europe and Australia, which confirm that different labelling systems can be equally effective in helping consumers identify healthier options, although other studies show no short-term effect on purchasing decisions.

Recent research from the International Food Information Council (IFIC) highlighted how nutrition labels can influence consumer purchasing. The research found that the presence of references to "bioengineered" (BE) foods on labels led to an increase in consumer concerns, especially regarding human health, impacting the likelihood they will purchase as well as the price they would be willing to pay for a product containing GMOs.

Most studies do indicate that FOP labels are helpful in guiding consumer choices. Crucially, other factors, such as price, familiarity with a product, consumer motivation and nutrition knowledge, have been shown to influence purchasing decisions significantly.

However, the report notes that most consumer research has been conducted in Europe, North & South America, Australia and New Zealand. Given the potential for variance, studies in other regions are needed to understand better local consumer attitudes.

Future considerations
In order to engage with what drives consumer choice, and in the end, healthier lifestyles, the report suggests further areas that require more consumer research:
• Do consumers make long-term healthier food choices as a result of having used nutrition information on food packaging?
• To what extent do nutrition labelling schemes have to be standardized to help consumers cultivate healthy eating habits?
• How can consumers best be helped to make good use of nutrition labels to make better food choices?
• Is nutrition labelling beyond packaged foods useful? E.g., on menus.
• How can new technologies best be used to encourage healthy choices.

An EUFIC spokesperson tells NutritionInsight, "We believe in the power of communicating and providing relevant information in the right form and through the right channel, tailored to the audience we want to engage with. In order to do so, we partake in consumer research as well as provide updates on the latest scientific findings (GUNL) which are aimed at better understanding behaviour towards food – the start to any appropriate formulation of information content and design."
By Laxmi Haigh

India to limit trans-fats ahead of WHO's global target

By Gill Hyslop 25-Jun-2018 Bakery & Snacks

The Food Safety and Standards Authority Of India (FSSAI) has agreed, in principal, to reduce the trans-fat content in vanaspati and bakery shortenings and margarines to less than 2% by 2022.

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India's food regulator has proposed to place a 2% by weight limit on the amount of trans fat content in industrially produced vegetable oils, vegetable fat and hydrogenated vegetable oil as part of its goal to make India trans-fat-free by 2022. TFAs are produced when vegetable oil hardens in a process called hydrogenation. They are largely present in vanaspati (a hydrogenated vegetable fat commonly used as a substitute for butter) and margarine and bakery shortenings. They are also formed during repeated heating of fats and oils while preparing deep fried products.
In India, vanaspati is mainly used in preparation of mithai (such as ladoo, imarti and jalebi) and deep fried foods, while margarine and bakery shortenings are used in preparation of bakery products like cakes, pastries and puffs.

Industrially produced TFAs can be easily eliminated by adopting newer technologies that allow the use of healthier oils in place of PHVOs. TFAs are also present naturally in dairy milk. "When consumed in moderation, the natural trans-fatty acids are not known to have adverse health effects," said the regulator. According to Pawan Kumar Agarwal, CEO of FSSAI, India will be "a year ahead of the global target to eliminate industrially-produced trans-fat from the food supply by the year 2023." In May, the World Health Organization (WHO) launched a movement known as REPLACE (Review dietary sources, Promote use of healthier fats, Legislate, Assess changes, Create awareness and Enforce) that outline show countries can remove and replace all trans fatty acids (TFAs) from their food supplies, with the intention to eradicate it from the globe.

TFAs have been shown to have harmful effects on health, raising bad cholesterol levels and increasing risk of heart disease, stroke and type 2 diabetes. The WHO states TFAs are the culprit behind cardiovascular disease that claims over 17 million lives annually.


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Indian government announces major fortification initiative in 118 districts

By Cheryl Tay 18-Jul-2018
NutraIngredients Asia

The Indian government has announced that 118 districts in the country will receive fortified rations, in its latest attempt to fight widespread malnutrition, especially among women and children.

Consensus between authority, industry and the public
The decision was taken in New Delhi of FSSAI officials and vanaspati and edible oil manufacturers, along with public health experts and consumer organisations. "It has been agreed that this plan will be implemented in a phased manner. That will effectively bring the level of trans-fats in food in the country to zero," added Agarwal.
Now that consensus has been reached, the food authority will release a draft regulation soon. The final regulation will take about three to four months. "The FSSAI commits to facilitate industries in capacity-building for the smooth transition," said Agarwal.

In 2015, the Indian food regulator set the maximum level of TFAs at 5% in food products, down from 10%. It also directed that the level of trans fats must be disclosed on the label.
Several countries have already limited TFAs in all foods to 2%, including Denmark, Chile, Norway, Singapore, South Africa and Ecuador. Other countries – such as Austria, Hungary and Latvia – limit its use to 2%, but with some exceptions. Even more countries have started making steps towards restricting and removing TFAs from their food, including Canada, Switzerland, Thailand, Britain and the US.

These rations will come in the form of wheat and rice enriched with vitamins and supplements, under an initiative called the National Nutrition Mission, which was developed by the food ministry and government think-tank NITI Aayog. This is the first measure under the National Nutrition Mission, which was approved by the government in December 2017, on a three-year budget of Rs 90.46bn.

Aspirational additions

The two main nutrients that will be added to the food grains supplied by the public distribution system are iron and folic acid, with the guidelines for wheat and rice fortification to come from the Food Safety and Standards Authority of India (FSSAI). At the same time, a National Council on Nutrition has been formed to oversee the initiative. It will be chaired by NITI Aayog vice chairman Rajiv Kumar, and will report to PM Narendra Modi every six months.
There will also be a second part to the initiative, which will cover 235 more districts in India.

The 118 current districts, referred to as aspirational districts, all have a set of 49 low-baseline socio-economic indicators, such as nutrition, overall health and education, and infrastructure, i.e., indicators that they have been performing poorly in these areas. Fortified varieties of wheat and rice are to replace the regular varieties, and mills using fortification machines will be chosen to supply the nutrient-enriched grains.

At the moment, the National Food Security Act dictates that 50% of India's urban populations and 75% of its rural populations get wheat at Rs 2 per kg and rice at Rs 3 per kg, with each recipient entitled to a total of 5kg every month. The fortified replacements will incur higher costs, and as such, are likely to increase the existing food subsidy bill from the current Rs1.69 trillion.

Longstanding problem

Issues such as low birth weight, under-nutrition, anaemia and stunting have been prevalent in India for many years.
An ASSOCHAM study last year revealed that India was home to the highest number of malnourished children in the world, while 0% of school-going children in India have been found to be vitamin D-deficient. Furthermore, children are not the only demographic in India facing such problems. Maternal nutrition is also sub-par, with anaemia rates among pregnant women worryingly high.

NITI Aayog reported earlier this year that 35.7% of children in India under-five were underweight and 8.4% were stunted.

However, the latter figure was still lower than a decade prior, when 48% of children under five were said to be stunted. This might be due to the numerous fortification drives implemented over the years, although they were slow to catch on initially.

India's FSSAI proposes new rules for edible oils labelling

By Lester Wan 25-Jul-2018 Food Navigator Asia

The Food Safety and Standards Authority of India (FSSAI) has proposed the mandatory labelling of blended edible vegetable oils to indicate the exact percentage of the blend on the front of the pack.

This labelling will accompany other recently-proposed amendments to the Food Safety and Standards (Packaging and Labelling) Regulations, 2011, regarding manufactured and processed food. This move is intended to better enable consumers to make a more informed choice when purchasing manufactured or processed food products.

New oil labelling guidelines
In the draft regulations, the FSSAI stated: "very package containing an admixture of edible oils shall carry the following label declaration immediately below its brand name, namely: Blended Edible Vegetable Oil."

"The font size of the label declaration Blended Edible Vegetable Oil shall not be less than 5mm
"Provided that the font size of the label declaration shall not be less than 10mm, in case the net quantity of the edible oils contained in the packages is more than 1 litre.
"There shall also be the following declaration in bold capital letters along with the name of product on front/central panel: "NOT TO BE SOLD LOOSE."

The name and nature of each edible vegetable oil in its raw or refined form would also have to be clearly listed, together with its percentage by weight.

Following the Central Government's approval of the draft regulations, notice was given in The Gazette of India with the amendments made public and feedback and comments taken into consideration for a period of thirty days, which recently came to an end.

Objections or suggestions were addressed to Pawan Kumar Agarwal, CEO of FSSAI.
Once the draft regulations are officially finalised, manufacturers of blended edible oils will be expected to comply.

The food regulator has also recently stated that it plans to finalise food labelling and display regulations for packaged food products including proposed traffic light labelling for high fat, sugar and salt (HFSS) foods within the next few months.

Cooking oil to biodiesel

Additionally, the FSSAI has been in talks with the Indian Biodiesel Association to establish a nationwide ecosystem for the collection of used cooking oil to be converted to biodiesel. This comes as new regulations for the monitoring of used cooking oils came into force in India from July 1.

"Annually, about 23 million tonnes of cooking oil is consumed in India. There is potential to recover and use about 3 million tonnes of this for production of bio-diesel," the FSSAI stated. This has an estimated value of about Rs 18,000 crore per year.

Presently, used cooking oil is often disposed of in an environmentally hazardous manner, causing pollution and choking sewage systems. Furthermore, it sometimes finds its way to be reused by small restaurants and street vendors.

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